

Conference Agenda

MedBiquitous Annual Conference 2011

May 9-11, 2011

**Johns Hopkins University School of Medicine
Baltimore, Maryland USA**

May 9, 2011

- 8:00 am – 4:00 pm Registration and refreshments
 Workshops
 Preregistration required, limited seating
- 9:00 am – 12:00 pm MedBiquitous Orientation
 Valerie Smothers, MedBiquitous
 Chara Balasubramaniam, MedBiquitous Europe
- Designing and Implementing a Competency Framework
 Susan Albright, Tufts University
- 9:00 – 10:30 am Activity Report Working Group Meeting
- 10:30 am – 12:00 pm Learning Objects Working Group Meeting
- 12:00 – 1:00 pm Lunch
 Workshops
 Preregistration required, limited seating
- 1:00 – 4:00 pm Building a Virtual Patient Curriculum
 Terry Poulton, St. George's University of London
 Chara Balasubramaniam, St. George's University of London
- Design tips for Effective, Reusable E-learning
 Nina Diebler, Serco NA
- 1:00 – 2:30 pm Competencies Working Group Meeting
- 2:30 – 4:00 pm Metrics Working Group Meeting

May 10, 2011

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| | Technical Steering Committee Meeting |
| 7:00 – 8:30 am | |
| 8:00 – 9:30 am | Continental Breakfast |
| 8 am – 6:00 pm | Registration |
| | Plenary session |
| | Welcome |
| | Don E. Detmer, M.D., M.A., Chairman, MedBiquitous Board of Directors |
| | Advancing Health Education: A MedBiquitous Update |
| | Peter Greene, M.D., Executive Director, MedBiquitous |
| | KEYNOTE: |
| 9:00 am –10:50 am | An Innovation Center for Medicare and Medicaid: Opportunities for IT and Education |
| | Sachin Jain, M.D. , Center for Medicare and Medicaid Services |
| | Reactor Panel |
| | Dave Nichols, M.D., Johns Hopkins School of Medicine, chair; |
| | Harold Lehman M.D., Johns Hopkins School of Medicine |
| | Nancy Davis, Ph.D., National Institute for Quality Improvement and Education |
| 10:50 – 11:15 am | Break |
| | Plenary session |
| | KEYNOTE: |
| | Portfolios for Lifelong Competence Assessment, Robert Galbraith,M.D., National; Board of Medical Examiners |
| 11:15 am – 12:30 pm | Reactor Panel |
| | Eric Holmboe, M.D., American Board of Internal Medicine, chair; |
| | Linda Lewin, M.D., University of Maryland School of Medicine |
| | Tim Willett, M.D, Royal College of Physicians and Surgeons of Canada |
| 12:30 – 2:00 pm | Lunch |
| | Unconferences |
| 2:00 – 3:00 pm | Influencing the environment to drive change in healthcare education |
| | Ross Martin, M.D., M.H.A., Deloitte Consulting, leader |
| 3:00 – 3:20 pm | Break |

Innovation Demonstrations

Implementing secure Web services using Professional Profile

Madhav Iyer¹ ; Neal Swearer²

¹National Board of Medical Examiners, ²Association of American Medical Colleges

Playing Well With Others: Using Web Services For Interoperability and Content Interchange

Dmitriy Babichenko ; James B McGee ; Teppituk Krinchai

University of Pittsburgh School of Medicine

XML-based E-learning Development: Designed for Efficiency and Flexibility

Rebecca Bodrero

Concurrent Technologies Corporation

An Evaluation of Mobile Phone SMS Text Messaging Technology for Managing Attendance at Academic Regularly Scheduled Series using ACCME PARS Web Standard

Jeremy Curtis Lundberg¹, Mila Kostic² ; Zalman Agus²

¹DLC Solutions, ²University of Pennsylvania School of Medicine

3:20 – 5:00 pm

ACCME PARS Implementation

Bill Bunting ; Nick Momich

Rievent Technologies

De-Identification of Facial Images Using Composites

Mark Edward Engelstad, Genevieve Melton

University of Minnesota

Development of Virtual Patient Simulations for Medical Education

Douglas Danforth¹ ; Chad Jackson² ; Eloise Pasteur³ ; Mary Johnson⁴ ;

Mike Procter⁵ ; Richard Chen¹ ; Robert Heller⁵

¹The Ohio State University, ²American College of Chest Physicians,

³Eloise Pasteur Educational Designs, ⁴Florida State University, ⁵Athabasca University

Medical Virtual Patients in Virtual Worlds

Sheetal Kavia ; Luke Woodham ; Terry Poulton ; Trupti Bakrania

St Georges University of London

Using Electronic Virtual Patients To Develop Skills For Evidence-Based Medicine And Clinical Reasoning

Ralph AARONS; Joseph Rencic ; Susan Albright

Tufts University School of Medicine

The Burden of Completing Educational Metadata for Digital Resources: a Focus Group Study on User Perceptions

Panagiotis D Bamidis¹; Daniela Giordano²; Maria Nikolaidou¹; Philip Davies³; Stathis Konstantinidis¹; Stefanos Triaridis¹; Theodoros Kontakiotis¹

¹Aristotle University of Thessaloniki, ²University of Catania, ³European Cervical Cancer Association

5:00 – 6:00 pm

Reception

May 11, 2011

Continental Breakfast

7:00 – 8:00 am

7:00 – 8:00 am

Virtual Patient Working Group Meeting

7:00 am – 12:00 pm

Registration

Panel: Virtual Patient and Simulation Research and Innovation

Can a Virtual Patient Be Used as an Individual, Team and System Needs Assessment Tool?

Timothy Willett¹, Pierre Cardinal², Thomas Low²

¹ Royal College of Physicians and Surgeons of Canada

² University of Ottawa

Using the MedBiquitous Virtual Patient Data Standard to Import and Export VP Cases – A Reality Check

James B McGee ;Christopher Toth ; Dmitriy Babichenko ; Jane Alexander ; Teppituk Krinchai

University of Pittsburgh School of Medicine

8:00 – 9:30 am

Using Rules as a Pedagogical Tool in Linear and Global Virtual Patients

Susan Albright; Daniel Walker ; Janet Cowan ; Joe Rencic ; Laurie Demmer ; Mark Bailey ; Ralph Aarons

Tufts University School of Medicine

Developing Data Exchange Protocol Standards for Healthcare Simulators

Beth Ann Fiedler; Brian Goldiez, University of Central Florida; Teresita Sotomayor, Army Research Lab

Panel: E-learning Practice

WebEncounter: An Online Application Enabling Remote Encounters between Learners and Standardized Patients for the Practice, Assessment,

and Remediation of Clinical Skills
Gregory James McGee; Christof J Daetwyler ; Dennis Novack
Drexel University College of Medicine

Building and Assessing a National Online Curriculum on “The Clinical Assessment of Substance Use Disorders”
Christof Juerg Daetwyler¹; Barbara Schindler¹ ; Dennis Novack¹ ; Paul Lanken²
¹Drexel University College of Medicine ; ²University of Pennsylvania School of Medicine

Web-based Simulation as a Component of Continuing Medical Education: Data from the CSAT Project
Tristan Gorrindo; Elizabeth Goldfarb ; John A Fromson ; Lee Baer ; Robert J Birnbaum ;
Massachusetts General Hospital

Pathways for Open Resource Sharing through Convergence in Healthcare Education (PORSCHE)
Lindsay David Wood¹ ; Kate Lomax ²; Megan Quentin-Baxter¹ ; Richard Osborn ²; Suzanne Hardy¹
¹Higher Education Subject Centre MEDEV, ² NHS eLearning Repository

Panel: Data Exchange and the Professional Continuum

Two Years of CME FastTrack: More than One Hundred Thousand Credits* transferred via the MedBiquitous Activity Report Standard
Steve Kenney¹; Benjamin Greenberg²;
¹American Osteopathic Information Association, ²WebMD Health

Formative Evaluation of the Implementation of the Medical Education Metrics Standard for Continuing Education
Francis Kwakwa¹ ; Andrew Rabin² ; Sean Hayes³ ; Valerie Smothers⁴, and the MedBiquitous Metrics Working Group Members⁵
¹Radiological Society of North America, ²CECity, ³AXDEV Group, ⁴MedBiquitous, ⁵Various

Expanding Academic Medicine through the Continuum of Learning Initiative
Eric Wilkerson
Association of American Medical Colleges

Data Commons, a Web-services Data Exchange System in Development by AAMC and NBME
Kirke B. Lawton¹; Theresa Roselli²
¹Association of American Medical Colleges, ²National Board of Medical

9:30 – 9:45 am Examiners²
 Break
 Panel: Virtual Patient Practice

Designing a Virtual Patient for Training Communication Skills
 April Barnes-Renfro¹ ; Jennie Gallimore¹ ; Phani Kidambi¹ ; Rosalyn Scott²
¹Wright State University, ²Dayton VA Medical Center

9:45 – 11:15 am Implementing an Online Interactive Curriculum using Virtual Patients
 Trupti Bakrania; Alexandra Higton ; Luke Woodham ; Sean Hilton ; Terry Poulton ; Sheetal Kavia ;
 St George's University of London

Beyond the Software - What Educators Need to Implement Virtual Patients
 James B McGee; Dmitriy Babichenko
 University of Pittsburgh School of Medicine

Implementation of the MedBiquitous Virtual Patient Standard –
 Generalizable Best Practices from the eViP Project
 Nabil Zary
 Karolinska Institutet
 Panel: E-learning Research and Innovation

The Use of Distance Learning Technologies to Bring Simulation-based
 Critical Care Training to a Remote Community in Northern Canada
 Timothy Willett^{1, 2}, David Neilipovitz³ ; John Kim³ ; Pierre Cardinal¹ ;
 Rick Hodder³ ; Shahin Shirzad⁴ ; Susan Brien² ;
¹CRI Critical Care Education Network , ²Royal College of Physicians and Surgeons of Canada, ³University of Ottawa, ⁴University of British Columbia

Applying Semantic Web Technologies to the Meta-description of Medical
 Education Resources
 Evangelia Mitsopoulou¹ ; Panagiotis Bamidis² ; Daniela Giordano³ ; Stefan Dietze⁴ ; Charalampos Bratsas²
¹St. George's University of London, ²Aristotle University of Thessaloniki, ³Universita' di Catania, ⁴The Open University

The Interagency EXCHANGE: Technology and Standards Solutions for
 Sharing with Multiple Agencies
 Dawn Carroll ; Haley Steele
 Department of Veterans Affairs

HeLMS - Development and Implementation of a Health e-Learning

Management System Framework for the Clinical Workplace
Ian Graham
Postgraduate Medical Council of Victoria

Panel: Competence Measurement and Tracking

Online Mini-cex Plus: A Novel Tool for the Documentation of Observed
Clinical Skills Competencies that Provides Feedback with Remediation
Assignments

Christof Juerg Daetwyler¹, Anthony Donato² ; Gregory McGee¹
¹Drexel University College of Medicine, ²The Reading Hospital and
Medical Center

Tracking Clinical Case Logging and Professionalism in a Distributed
Education Model

Lise McCoy, Frederic N. Schwartz
School of Osteopathic Medicine in Arizona

A Proposed Conceptualization for the Standardized Digital Representation
of Competencies

Timothy Willett^{1, 2} ; Rachel Ellaway³ ; Rosalyn Scott⁴ ; Valerie Smothers⁵
Simon Grant⁶

¹CRI Critical Care Education Network , ²Royal College of Physicians and
Surgeons of Canada, ³Northern Ontario School of Medicine, ⁴Dayton VA
Medical Center, ⁵MedBiquitous, ⁶JISC Centre for Educational Technology
and Interoperability Standards

The Curriculum Inventory Portal: An International Health Professions
Education Curriculum Inventory

Terri Cameron
Association of American Medical Colleges

11:15 – 11:30 am

Break
Closing Plenary: TBD

Spotlights:

Technologies for Health Professions Practice and Learning

11:30 am – 12:30 pm Mike Zarski, JD, American Osteopathic Association

Competence Tracking and the Professional Continuum
Rosalyn Scott, MD, Department of Veterans Affairs

Virtual Patients and Simulation Research

1 – 2:30 pm Nabil Zary, Ph.D., Karolinska Institutet
Professional Profile Working Group Meeting

Keynote Speakers:



Robert M. Galbraith, MD, MBA

Dr. Galbraith is Director of the Center for Innovation at the National Board of Medical Examiners. His major interest is in envisioning important changes in the role of the physician and the delivery of health care, and developing appropriate assessment approaches that support these activities.



Sachin H. Jain, MD, MBA

Dr. Jain is Senior Advisor to the Administrator of the Center for Medicare and Medicaid Services. In this role, he works closely with Dr. Berwick in executing his agenda with a special emphasis on the launch of the Center for Medicare and Medicaid Innovation.

The MedBiquitous Annual Conference 2011 provides the opportunity to learn how technology standards and innovations can support common solutions to the challenges facing healthcare education and assessment organizations. Themes include:

- Educational technology research
- Virtual patients and simulations
- Electronic portfolios
- E-learning repositories and content interchange
- Data Exchange supporting professional development and certification
- MedBiquitous standards implementation
- Solutions for competence measurement and tracking

MedBiquitous is grateful to the following sponsors for their support.



A M E R I C A N
O S T E O P A T H I C A S S O C I A T I O N



Abstracts

MedBiquitous Orientation

May 9, 2011 9:00 AM

Valerie Smothers, MedBiquitous

Chara Balasubramaniam, MedBiquitous Europe

Technology standards allow organizations to connect in new ways and share their work across institutional and even national boundaries. During this workshop, we will explore what technology standards are and how they can be used, focusing on MedBiquitous technology standards and some key projects that illustrate how they can be used. Participants will work with one another to define a sample standard data structure, identify common challenges, and identify opportunities for leveraging standards to enable collaboration and integration. The workshop is designed for educational leaders, learning technologists, technical developers, and a general lay audience.

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

- Describe what a technology standard is and the potential benefits standards afford
- Describe technology standards developed by MedBiquitous
- Identify opportunities for collaboration and integration leveraging standards

Designing and Implementing a Competency Framework

May 9, 2011 9:00 AM

Susan Albright, Tufts University

Increasingly schools use frameworks of competencies as a basis for their health professions curriculum. The development of such frameworks and their implementation within electronic systems is no small task. In this workshop, we will walk through the steps involved in implementing an electronic competency framework including: 1) The process (and potential pitfalls) of creating a competency framework de novo 2) the relationship between competencies and assessment 3) the process of developing an electronic system to manage the competency framework across a health professions curriculum. Participants will share experiences from their own organizations and work together to identify the challenges, opportunities, and lessons learned.

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

- Describe a process for developing competency frameworks
- Identify challenges and potential barriers to developing and implementing competency frameworks
- Identify opportunities available with the implementation of competency frameworks in an electronic system

Building a Virtual Patient Curriculum

May 9, 2011 1:00 PM

Terry Poulton, St. George's University of London

Chara Balasubramaniam, St. George's University of London

Case based or Problem-based learning is a well-established process in undergraduate medicine, in which students in groups work through a patient scenario, defining the knowledge they require to understand the scenario, exploring diagnoses and subsequent management, and generating learning objectives as they progress. Recently the elearning Unit at St George's (eLU) obtained funding from the JISC 'curriculum transformation' programme for 'Generation 4', a project which replaced paper-based PBL with interactive 'virtual patients' (VPs). These online scenarios allowed groups of students to consider different options as the case unfolded, take decisions, and explore the consequences of their actions, whilst retaining the PBL focus. In an extension of this process virtual patients have begun to overtake other areas of the curriculum many other areas of the curriculum, driven both by student/teacher interest, and recognition of their pedagogic value. These uses have increased, to cover: replacing paper-based PBL; creating interactive VP-based lectures and seminars; replacing paper-based assessment; supplementing clinical bed-side teaching.

The workshop:

- Will briefly discuss the ways we are using VPs to transform our curriculum process
- Outline the way in which the new VP/PBL have been created
- Allow participants in small groups to simulate the new student PBL with an experienced tutor
- allow participants to begin to create their own VPs.

Design Tips for Effective, Reusable E-learning

May 9, 2011 1:00 PM

Nina Diebler, Serco NA

Instructional Design for e-Learning Workshop

This workshop will help you design highly engaging and interactive e-learning content that can be reused or repurposed. We'll focus on the tips and best practices that really work to ensure your project succeeds and your learners have a positive experience.

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

- Design engaging and interactive e-learning
- Describe best practices for creating reusable e-learning

Influencing the environment to drive change in healthcare education

Ross Martin, M.D., M.H.A., Deloitte Consulting, leader

Many MedBiquitous members are working on the development of technology standards and innovative solutions, but much of what we aspire to do requires broad change and the rest of healthcare often treats education and professional development as afterthoughts. What's required for turning apathy into engagement and making naysayers into champions for innovative approaches to healthcare education? Dr. Ross Martin, a.k.a. Dr. HITECH of YouTube fame, brings his experiences in working to shape the health information technology environment through standards, policy, networking and Informatimusicology to affect change.

Implementing secure Web services using Professional Profile

May 10, 2011 3:20 - 5:00pm

Madhav Iyer, NBME

Neal Swearer, AAMC

The Association of American Medical Colleges (AAMC) and National Board of Medical Examiners (NBME) have jointly developed a data exchange framework called Data Commons. The technical architecture of Data Commons is based on SOAP Web Services implemented in a Java EE environment. The WSDL is WS-I Basic Profile 1.0 compliant enabling interoperability with any Web Services client. New medical data providers can easily plug-in to this infrastructure by implementing Web Services using the Data Commons XML interface specifications. The system is highly secure through use of SSL and message encryption. MedBiquitous Professional Profile XML data format is used by Data Commons to send and receive medical professional data. Data Commons is being used by NBME to get updated medical school student rosters to support Web Based Testing (WBT). Data Commons is also being planned for use in getting information about new matriculants from LCME schools.

Playing Well With Others: Using Web Services For Interoperability and Content Interchange

May 10, 2011 3:20 - 5:00pm

Dmitriy Babichenko Information Science, University of Pittsburgh School of Medicine

Teppituk Krinchai, Civil Engineering, Lab for Educational Technology, University of Pittsburgh School of Medicine

James B McGee, MD, Lab for Educational Technology, University of Pittsburgh School of Medicine

Web services are software applications designed to support over-the-network interactions between software systems. A web service is typically an Application Programming Interface (API) that allows one application to send or retrieve data from another application without knowing each other's infrastructure. Most educational systems are developed with little thought for interoperability; therefore data collected by one software application is rarely available to other systems. Integrating web services into existing educational systems and building new systems with web service API infrastructure in mind, allows seamless cross-platform, cross-language and cross-institution interactions between multiple web applications. In the long run, this approach has saved us time and facilitated new educational opportunities. The University of Pittsburgh School of Medicine's Lab for Educational Technology utilizes web services based on the SOAP protocol to integrate our vpSim (virtual patient simulation) application with external applications such as Moodle and Blackboard, in addition to our proprietary LMS. Through examples, we will demonstrate how web services are used to efficiently transfer data between new and legacy web applications and even popular websites such as Facebook, Twitter and Amazon, to create a seamless user experience.

XML-based E-learning Development: Designed for Efficiency and Flexibility

May 10, 2011 3:20 - 5:00pm

Rebecca Bodrero MS, MBA, Concurrent Technologies Corporation

The E-learning Development Platform is a standards-based, non-proprietary set of tools developed to provide flexibility in meeting the needs of diverse e-learning projects. The approach features: storyboard and interaction templates; robust and customizable graphical user interfaces; audio, video, animation and interactive elements; powerful assessment exercises and capabilities; strong SCORM support for reusable and shareable objects; automated Section 508 compliance and support for mobile devices through XSLT; flexible courseware development tools and processes; efficient content updating and course maintenance; and an extensible and scalable architecture.

An Evaluation of Mobile Phone SMS Text Messaging Technology for Managing Attendance at Academic Regularly Scheduled Series using ACCME PARS Web Standard

May 10, 2011 3:20 - 5:00pm

Jeremy Curtis Lundberg MSSW, CEO, DLC Solutions

Mila Kostic, BA, University of Pennsylvania School of Medicine

Zalman Agus, MD, University of Pennsylvania School of Medicine

In an era of shrinking budgets and resources, healthcare organizations are looking to technology to minimize costs associated with administering continuing medical education (CME). The ubiquitous nature of mobile devices and SMS text messaging capabilities provides CME

providers with a novel method to tracking attendance at live CME events. In partnership with DLC Solutions, the University of Pennsylvania School of Medicine Office of Continuing Medical Education implemented a pilot program comparing mobile SMS text messaging with other methods of attendance tracking for Regularly Scheduled Series (RSS) and live meetings associated with this large academic CME program. The mobile SMS text-messaging module was integrated with the learning management system, which leverages the ACCME PARS Web reporting standard. In the course of this technology demonstration, we will: [1] Describe the rationale for comparing SMS text messaging vs. other methods of keeping attendance at RSS and live meetings. [2] Demonstrate the SMS text messaging technology platform, algorithms, and underlying learning management platform. [3] Discuss the finding from the feasibility study, including participants' response, considerations for effective implementation, and outcomes data. Join us as we present using demonstration and case study discussion to illustrate the University of Pennsylvania School of Medicine Office of Continuing Medical Education's experience implementing an SMS text-messaging platform for tracking RSS participant attendance. We will discuss our technological approach, practical considerations for the CME enterprise, and our findings.

ACCME PARS Implementation

May 10, 2011 3:20 - 5:00pm

Bill Bunting MS, Computer Science, Rievent Technologies

Nick Momich, BS Biology, Virginia Beach, VA

The Rievent Platform™ is a continuing medical education learning management system. The platform is used by accredited providers, medical societies, publishers, and organizations to manage, deliver, and measure both live and enduring continuing medical education. In 2010, the ACCME mandated that accredited providers report activity data via the ACCME Program and Activity Reporting System (PARS) by March 31st, 2011. Rievent implemented PARS features within the Rievent Platform™ making PARS management and reporting simple and automated for a non-technical user community. Information related to accreditation is entered and maintained in the Rievent Platform™ database. Detailed participation data is tracked and maintained as attendees participate in activities. The Rievent Platform™ tracks details like ACCME Activity Type, sponsorship type, hours of instruction, commercial support, advertising and exhibit income, expenses, and activity design characteristics such as change in competence, performance, and change in patient outcomes. The PARS batch upload XML format is an adaptation of two MedBiquitous standards: ANSI/MEDBIQ ME.10.1-2009, Medical Education Metrics and ANSI/MEDBIQ LO.10.1-2008, Healthcare Learning Object Metadata Rievent will demonstrate the incorporation of PARS and MedBiquitous standards within the Rievent Platform™. Rievent is committed to supporting the CME community, ACCME, and its accredited providers in their mission to improve, measure, and modernize CME.

De-Identification of Facial Images Using Composites

May 10, 2011 3:20 - 5:00pm

Mark Edward Engelstad DDS, MD, MHI Oral and Maxillofacial Surgery, University of Minnesota

Genevieve Melton, MD, Surgery, University of Minnesota

Facial surgeons rely on facial photography to illustrate findings and educate other surgeons. Unlike other parts of the body, photographs of the face are readily identifiable, yet surgeons have a need to accurately present facial features for educational purposes. Traditional methods of de-identification may not fully protect identity or may decrease educational image quality. We have developed a novel method of using facial composites to de-identify full-face images while leaving educationally relevant components of the facial appearance unaltered. Methods: 20 composite facial images were developed. 10 of these contained components of faces familiar to the student volunteers. Volunteers viewed the faces twice—first unprimed, then primed to the presence of composites. Volunteers then rated faces de-identified by different methods.

Development of Virtual Patient Simulations for Medical Education

Development of Virtual Patient Simulations for Medical Education

May 10, 2011 3:20 - 5:00pm

Douglas Danforth Ph.D., Obstetrics and Gynecology

Mike Procter, B.S., Athabasca, Alberta

Robert Heller, Ph.D., Athabasca, Alberta

Eloise Pasteur, Ph.D., York, United Kingdom

Richard Chen, M.D., Columbus, OH

Mary Johnson, Ph.D., Florida State University Chad Jackson, M.S., RRT, CHT, American College of Chest Physicians

The principal goal of this project is the development of virtual patient simulations for medical education. In order to simulate real patients with greatest fidelity, virtual patients in Second Life (SL) are controlled by artificial intelligence. This allows students to engage in a natural language conversation with the patient to obtain relevant patient history, symptoms, etc, and then to develop differential diagnoses and treatments appropriate for the simulated condition of the patients. Our goal is to provide students with undifferentiated patients to sharpen their diagnostic skills as well as allowing students to rehearse professional behaviors in a risk-free environment, providing opportunities for skills practice and feedback prior to real-world patient encounters. The system consists of; 1) a web interface that allows subject experts to build and maintain the questions and case datasets without having to understand or interact with the underlying code, 2) a case repository that contains the content, or knowledge, that the virtual patient needs to perform its task, decoupled from AIML or any specific conversational engine. 3) an AIML

generator which is a Java application that converts XML case files to AIML for the conversational agent. This content AIML is combined with common AIML files which handle generic conversation-related behaviors and avatar control. 4) an AIML sever which is an open source program – (Program D) with an HTTP server component. SL scripts access this service via typical HTTP request functions, and 5) Second Life scripts which provide an interface between SL users and AIML server, avatar animation and other interaction with avatars and in world objects.

Medical Virtual Patients in Virtual Worlds

May 10, 2011 3:20 - 5:00pm

Sheetal Kavia BSc Honors Medical Biology, e-Learning Unit, St Georges University

Luke Woodham, MSc Multimedia Applications & Virtual Enviornments, e-Learning Unit, St George's University

Trupti Bakrania, BSc Honors Medical BioChemistry, e-Learning Unit, St George's University

Terry Poulton, e-Learning Unit, St Geroge's University

Virtual Patients (VPs) have been used at the core of the medical curriculum to deliver problem based learning

(PBL) scenarios. St George's, University of London (SGUL) has explored the use of virtual patients in virtual worlds such as Second Life, a freely-accessible world that allows its residents to create and develop environments and objects. The virtual world increases the immersion and realism of the exercises compared to text-based scenarios. SGUL began by creating PBL scenarios for use by paramedic work placement students which were delivered into the virtual world using the PIVOTE system, an open source tool that implements the ANSI /MEDBIQ VP.10.1-2010 standard. Based on feedback from the paramedic scenarios two medical scenarios were developed as part of the JISC-funded G4 project. These included a number of new developments, making wider use of the possibilities offered by the platform and improving the usability of the cases. The demonstration will showcase how the medical scenarios place the students in a GP surgery where they are required to carry out the history-taking, examinations and investigations before referring the patient for further tests. It will also highlight the significant changes made since the first paramedic scenarios were made, and explore ways in which the benefits of the virtual world environment can be incorporated into VP resources in the future.

Using Electronic Virtual Patients To Develop Skills For Evidence-Based Medicine And Clinical Reasoning

May 10, 2011 3:20 - 5:00pm

Susan Albright, BA, Technology for Learning in the Health Sciences, Tufts University School of Medicine

Joseph Rencic, MD, Division of General Internal Medicine, Tufts University School of Medicine

The new curriculum of TUSM includes a 2-year sequence entitled "Foundations of Evidence Based Medicine and Clinical Reasoning." This unit integrates courses that previously had been independent, including Epidemiology and Biostatistics, a graduated series of PBL courses, Evidence Based Medicine, and a new course 'Introduction to Clinical Reasoning'. Collaborative groups using virtual patient cases presented using TUSK, Tufts University Sciences Knowledgebase, have been key features of PBL for several years. The new course features virtual patient case presentations for the second semester of PBL modified to enable students to practice and develop some of the skills required for evidence based medicine. PICO-formulated 'foreground questions' can be created using tools in TUSK. Once created, these PICO questions can be routed from students to research librarians for evaluation. The PBL virtual patient cases use global navigation. The second year Clinical Reasoning virtual patients are presented via linear navigation to serve as the basis for learning concepts of clinical reasoning. Second year students in collaborative groups of 3 - 4 students working together on cases "out of class" review the cases and submit illness scripts and descriptor tables during the case. Subsequently, 4 - 5 groups join together with a physician facilitator to form a larger collaborative group for case-based learning. We will report on the use of the TUSK Case Simulator to present electronic virtual patients, by linear or global navigation, in collaborative groups for problem based learning and case based learning of skills essential for evidence based medicine and clinical reasoning/decision-making.

The Burden of Completing Educational Metadata for Digital Resources: a Focus Group Study on User Perceptions

May 10, 2011 9:45 - 11:15pm

PANAGIOTIS D BAMIDIS PhD, Medical School, Aristotle University of Thessaloniki

Maria Nikolaidou, MSc, Medical School, Aristotle University of Thessaloniki

Stathis Konstantinidis, MSc, Medical School, Aristotle University of Thessaloniki

Stefanos Triaridis, PhD, Medical School, Aristotle University of Thessaloniki

Daniela Giordano, PhD, University of Catania

Philip Davies, PhD, European Cervical Cancer Association

Introduction: To implement any of the available e-learning standards or resource schemas it is imperative that resource creators/authors will have to go through the metadata form filling process. This is also the case in the mEducator project (www.meducator.net) in which the consortium has been actively engaged to come up with a consensus for a resource metadata

scheme. In this paper emphasis is placed on user perceptions on metadata filling. The Focus Group process lasted for approximately two (2) weeks during September 2010, and the audience was composed of: a. Groups of Academics from the Medical School of Aristotle University of Thessaloniki, Greece b. Individual medical professionals, members of the European Cervical Cancer Association.

Can a Virtual Patient Be Used as an Individual, Team and System Needs Assessment Tool?

Timothy Willett MD, CRI Critical Care Education Network, Royal College of Physicians and Surgeons of Canada

Pierre Cardinal, MD, MScEpi, FRCPC, University of Ottawa

Thomas Low, MD, University of Ottawa

Virtual patients (VPs) are being instituted across the health education spectrum. In reported cases, VPs are being used for teaching/learning goals or as the basis for self-, formative and summative assessments. In the educational development cycle, needs assessments play a critical role for identifying priority learning needs to guide the development process. Currently, there are no reports in the health literature of a VP being used for needs assessments. We hypothesize that a VP could help to identify unperceived needs. To pilot-test a VP for this purpose, we conducted facilitated VP sessions using the SimuCase VP software with two interprofessional groups of 4 individuals (1 MD plus RNs, RT and/or pharmacist). In advance, to determine potential needs this VP may identify, we created a matrix: CanMeds Roles on one axis; individual competencies, team competencies and system functions on the other. We used video review and group reflection to determine which of the individual, team, and system aspects the VP was able to elucidate. For individuals, the VP elucidated needs with respect to all CanMeds roles. For teams, the VP revealed needs related to medical expert, communicator, collaborator and manager roles. For system function, the VP elucidated barriers and enablers related to medical expert, communicator, collaborator and health advocate. While further trials are necessary, it appears that VPs may be useful to identify unperceived needs of individuals, teams and systems.

Using the MedBiquitous Virtual Patient Data Standard to Import and Export VP Cases - A Reality Check

James B McGee BS, Lab for Educational Technology, University of Pittsburgh School of Medicine

Christopher Toth, BS, University of Pittsburgh School of Medicine

Dmitriy Babichenko, BS, University of Pittsburgh School of Medicine

Jane Alexander, BS, University of Pittsburgh School of Medicine

Teppituk Krinchai, University of Pittsburgh School of Medicine

Primary among the goals of the ANSI-approved MedBiquitous VP (MVP) standard is the ability to exchange and repurpose virtual patient (VP) cases between disparate authoring systems. Hundreds of VP cases are publicly available in the MVP format, primarily from the eViP consortium, derived from the CAMPUS, CASUS, OpenLabyrinth, vpSim and WebSP authoring systems. The Lab for Educational Technology (the Lab) at the University of Pittsburgh created vpSim based on the MVP standard and with the ability to import and export cases regardless of the system they originated from. The Lab conducted experiments to determine how well the MVP standard works for importing and repurposing available MVP packages into vpSim. Results were analyzed based on ability to import and display 1) text, 2) multimedia, 3) questions, and 4) if authoring/editing was possible after import. Compared to their original format, text typically imported intact, multimedia was usually successful, but questions only rarely. Greatest compatibility for authoring/editing was between vpSim and OpenLabyrinth cases. Incompatibility was a result of variation in the structure of the cases, the accuracy of the XML packages and the way systems interpreted the standard. Data collected should inform VP users, systems designers, and refinement of the MVP standard. DISCLOSURE: vpSim is licensed to Decision Simulation LLC; the University of Pittsburgh receives royalties and Dr. McGee is an equity holder and scientific advisor.

Developing Data Exchange Protocol Standards for Healthcare Simulators

Beth Ann Fiedler; Brian Goldiez, Ph.D., University of Central Florida; Teresita Sotomayor, Army Research Lab

We describe efforts undertaken to create a standard set of data exchange protocols that facilitate interoperability between simulators used in the healthcare field. The need for standard data arises for several reasons including exchange of information between the same simulators placed at different locations or the exchange of information between different simulator architectures. Training and education of geographically separated teams with different skill sets can require different simulators with differing levels of fidelity. A set of prototype exchange data is presented representing patient information and physiology. There are currently two records; one supporting lower fidelity simulators and the other supporting higher fidelity simulators. The individual parameters were selected and grouped by investigating inputs and outputs from several simulator companies. The range of variables is derived from the medical literature. The data structures embellish the Army's Synthetic Environment Core Life Form data structures and are intended to be balloted to become part of the IEEE 1278 set of standards used to define interactions between many simulators. The data structure presented also uses some of the parameterized aspects of the Medbiquitous virtual patient standard. Additional efforts described include expansion of the data structure to include information that is conveyed external to the simulators but is needed to support interoperability.

Building and Assessing a National Online Curriculum on "The Clinical Assessment of Substance Use Disorders"

Christof J Daetwyler, M.D., Office of Educational Affairs, Drexel University College of Medicine

Barbara Schindler, MD, Office of Educational Affairs, Drexel University College of Medicine

Dennis Novack, MD, Office of Educational Affairs, Drexel University College of Medicine

Paul Lanken, MD, Medicine, University of Pennsylvania School of Medicine

In 2007, Drexel University College of Medicine (DUCOM) and the University of Pennsylvania (PENN) became a NIDA (National Institute on Drug Abuse) Center of Excellence for Physician Information – with the task to build a national on-line curriculum on Substance Use Disorder issues. It was implied that the design of the curriculum should derive from our successful “doc.com” series: a set of 41 media-rich on-line modules for the teaching and learning of medical communication skills that was jointly produced by DUCOM and the American Academy on Communication in Healthcare (AACH). When the first module on “The Clinical Assessment of Substance Use Disorders” was presented to NIDA in 2009, it made such an impression that NIDA decided to fund a research study on the efficacy of the module with \$800,000.- - enough money to set up a careful study for measuring not only the effect of our learning intervention on factual knowledge, but also on attitude change. The study is being conducted jointly by DUCOM and PENN, results will be published in 2012. We propose to present the NIDA module and the research study to the audience and explain the different media formats that the module features - among them the annotated videos (known from “doc.com”) – and the novel “interview-matrix” for giving the disease a human face. Since the NIDA module was created with federal money, it is available for free and without royalties at <http://webcampus.drexelmed.edu/nida/>

Web-based Simulation as a Component of Continuing Medical Education: Data from the CSAT Project

Tristan Gorrindo MD, Division of Post-Graduate Medical Education, Massachusetts General Hospital

Elizabeth Goldfarb, BA, Division of Post-Graduate Medical Education, Massachusetts General Hospital

Lee Baer, PhD, Division of Post-Graduate Medical Education, Massachusetts General Hospital

Robert J Birnbaum, MD, PhD, Division of Post-Graduate Medical Education, Massachusetts General Hospital

John A Fromson, MD, Division of Post-Graduate Medical Education, Massachusetts General Hospital

The Computer Simulation Assessment Tool (CSAT) is designed to address specific needs within psychiatry and is driven by a three-fold educational approach to: serve as an educational

intervention, provide a performance assessment for each user, and conduct a documented knowledge gap analysis. CSAT simulations are accessed online. The user views an introduction and selects items from clinical lines of inquiry corresponding to learning objectives. For each item chosen, a video shows a patient and clinician completing the action. To approximate real-life encounters, the simulation includes embedded decoys and a time limit. CSATs have been used for a wide range of clinical scenarios ranging from management of stroke to informed consent for medication. CSAT provides an educational intervention upon completion of a simulation. Participants are provided with immediate, personalized remediation in the form of explanations of incorrect actions (omitted or completed in error) and links to relevant peer-reviewed manuscripts. Data collected from CSAT include errors of commission and omission, order choice, time management, and a virtual medical-chart note. When combined, these items create a rich assessment of performance. Finally, when data is aggregated across participants, specific measurements (e.g. which required items are consistently omitted, or which terms were not mentioned in the virtual note) can determine gaps in knowledge, thus providing learning objectives in future courses.

Pathways for Open Resource Sharing through Convergence in Healthcare Education (PORSCHE)

Lindsay David Wood B.Sc., MEDEV, Newcastle University

Suzanne Hardy, B.Sc., Higher Education Subject Centre MEDEV, Newcastle University

Kate Lomax, B.Sc., NHS eLearning Repository, The London Deanery

Richard Osborn, B.Sc., NHS eLearning Repository, The London Deanery

Background: The PORSCHE project envisages seamless repository access to academic and clinical learning resources (LR) for healthcare students in the UK. Healthcare students train extensively in practice where they are supervised by clinical staff charged with providing education to pre-registration trainees. Access to National Health Service (NHS) online services for undergraduate student learning, especially those located in practice education, is limited. The project is part of a £5M open educational resources (OER) programme, funded by the Higher Education Funding Council for England and administered by the Joint Information Systems Committee and the Higher Education Academy. The NHS eLearning Repository (NeLR) is the leading repository for healthcare LR and is an extensible search and discover platform, while JorumOpen is the national learning repository for Higher Education Institutions.

Aims: The aims of this project are to deliver a substantial number of OER in healthcare education; establish the basis for a long term national partnership between the NHS and academia by sharing of appropriately licenced content between JorumOpen and the NeLR; achieve widespread uptake of the OOER good practice toolkit and recommendations; promote debate over the development of a Consent Commons (based on the notion of Clinical Commons, proposed by Ellaway, et al., 2006[1]); and establish the value of the services in enhancing the student experience in clinical placement settings. [1]Ellaway R, Cameron H, and Ross M. Clinical recordings for academic non-clinical settings, The University of Edinburgh (on behalf of

the Joint Information Systems Committee), 2006: 94p. [Available at: www.cherri.mvm.ed.ac.uk accessed May 2010]

Two Years of CME FastTrack: More than One Hundred Thousand Credits* Transferred via the MedBiquitous Activity Report Standard

Annette Van Veen Gippe JBA, Deputy Director, American Osteopathic Information Association

Benjamin Greenberg, BA, Senior Product Architect, WebMD Health

Two Years of CME FastTrack: More than One Hundred Thousand Credits* transferred via the MedBiquitous Activity Report Standard In December 2008, Medscape and AOA launched CME FastTrack – a system which allows their members to automatically notify the AOA of CME credits earned at cme.medscape.com. In the last two years, osteopathic physicians have transferred over 100,000* CME credits using this integrated certificate exchange. The system, which eliminates the need for clinician participants to fax/mail their hard-copy CME certificates to the AOA, is based on the MedBiquitous Activity Report Standard as well as the MedBiquitous Professional Profile Standard that is used for matching. Based on labor estimates to process paper certificates, the AOA has saved \$650,000 since 2008. With Osteopathic Continuous Certification on the horizon, this proven system will allow for a smooth transition and a streamlined operation. This presentation will analyze CME FastTrack's transition from business case to enterprise system: We will address strategic and implementation challenges as well as provide insight into performance over the first two years of the software's production deployment. In addition, we will discuss Osteopathic Continuous Certification and the AOA Clinical Assessment Program and how this system has optimized the transmission and maintenance of continuous physician competence and performance information.

* At the time of this submission in November 2010, over 81,000 credits have been transferred. Given current volume, we project well over 100,000 will have transferred by May 2011.

Formative Evaluation of the Implementation of the Medical Education Metrics Standard for Continuing Education

Francis Kwakwa MA, Radiological Society of North America

Andrew Rabin, BS, CECity

Sean Hayes, PsyD, AXDEV Group

Valerie Smothers, MA, MedBiquitous

MedBiquitous Working Group Members

The MedBiquitous Metrics Working Group developed the Medical Education Metrics Standard (MEMS) to enable aggregate analyses of Continuing Education (CE) evaluation and outcomes data and to foster reliable research as to the extent CE impacts clinician knowledge and

competence. Approved as an American National Standard in 2009, MEMS allows organizations to digitally compile continuing education evaluation data across systems. The Accreditation Council for Continuing Medical Education (ACCME) has launched a new online reporting system called the Program and Activity Reporting System (PARS). ACCME accredited providers are able to utilize this system in order to electronically report utilization information and other required data. PARS is designed to accept data in an XML format based in part on MEMS. As this constitutes the first large scale use of MEMS on a national basis, the authors will share their experience with using MEMS as part of PARS reporting. Additionally, there will be a focus on how several organizations are supporting PARS reporting, and as part of that, how the MEMS standard was implemented. The authors will also present formative evaluation findings collected regarding the experience of those who have implemented MEMS, and as such, offer case study findings as to how to assess implementation of new systems. The approach may be a useful template for others seeking to evaluate the impact of new technologies.

Expanding Academic Medicine through the Continuum of Learning Initiative

Eric Wilkerson BS, Association of American Medical Colleges

The AAMC made the strategic decision to expand the scope of MedEdPORTAL (MEP) and embark on a new initiative called the Continuum of Learning Initiative (CLI). The aim of the CLI is to unite multiple data- and service-driven programs into a single, integrated education portal that links curricula, training innovations, teaching tools, and assessment resources across the entire physician-education continuum. The new system, released through a phased-delivery approach will expand the breadth and depth of academic medicine. The CLI will expand the scope of MedEdPORTAL to introduce a suite of new portals including:

- Innovations Portal - A new portal focusing on creating networks of communities around medical education innovations. The portal will enable educators to submit and locate ideas that are new, policies that work, and submit innovative approaches that are in the early stages of adoption.
- Curriculum Inventory Portal - A new portal focused on gathering and analyzing, reviewing and comparing curricula information from existing curriculum management systems that are being utilized by the majority of AAMC-member institutions. This new portal will allow for robust reporting and benchmarking on a national level. The CIP will use MedBiquitous competency and learning object standards to exchange data with commercial and non-profit educational entities.
- Performance Improvement Portal - A new portal focused on providing educational, research, quality improvement, logistical and other resources to the academic CME community. The new integrated suite of portals will provide all users (e.g. educators, learners, physicians in practice, etc.) searching any of the individual portals with related links to relevant content in each of the other Portals thus promoting learning across the entire continuum of medical education. The aforementioned suite of portals will be released through a phased-delivery approach over the next five years. Each portal launch will expand the breadth and depth of academic medicine through a seamless and interactive system, providing a multi-faceted learning experience.

Data Commons, a Web-services Data Exchange System in Development by AAMC and NBME

Kirke B. Lawton M.A., AAMC

Theresa Roselli, NBME

The Association of American Medical Colleges and National Board of Medical Examiners have jointly developed a data exchange framework that we call the Data Commons. The Data Commons, which went into operation in late 2010, uses Web services to facilitate secure and efficient information exchanges between multiple parties. The Data Commons is designed to reduce the time and effort required to establish and implement data sharing agreements from both the technical and legal/administrative perspectives. Key features of the system include: • A system for documenting, managing, and enforcing data sharing agreements; • Identity services to allow exchange of data between organizations without common person IDs; • Use of Professional Profile standard for the ID services and (optionally) for Web services exposed via the Data Commons; • Security and logging; • Potential for transaction-based fee collection for data exchanges (not yet implemented) We believe the Data Commons will be of interest to MedBiquitous conference attendees both in its own right and as an example of a collaborative Web services/data exchange effort between two organizations.

Designing a Virtual Patient for Training Communication Skills

April Barnes-Renfro MS, Wright State University

Jennie Gallimore, PhD, Center for Human-Centered Innovation, Wright State University

Rosalyn Scott, MD, Dayton VA Medical Center

Phani Kidambi, MS Wright State University

A human-centered design approach is being used to design a high-fidelity, interactive virtual patient (VP) for training communications skills. The objectives of this research are: 1) to develop a high fidelity VP that facilitates intuitive, natural interaction 2) to develop objective measures of communication skills. The realism of the VP will be enhanced through the integration of communication and personality models and emotion detection. Communication and personality models are being developed using input from subject-matter experts, experienced clinicians, literature review, and validated theory. Voice characteristics such as tone and inflection are analyzed to identify the affective component of the user's speech. This information will also be used to emulate emotion in the VP output in order to simulate a diverse range of personalities and scenarios. A prototype has been developed that utilizes speech recognition and a script-mapping mechanism to allow the learner to directly converse with the VP. Currently, the VP randomly selects one of three scripted responses initiated by a keyword in the user's inquiry. Ultimately, the VP response will be dependent on the content and emotion of the learner's speech, personality profiles and the specified learning objective. It is expected that the improved

fidelity and objective evaluation of the VP interaction will significantly improve the training of communication and interpersonal skills for healthcare providers.

Implementing an Online Interactive Curriculum using Virtual Patient

Trupti Bakrania BSc (Hons) Medical Biochemistry, St George's University of London

Dr Alexandra Higton, e-Learning Unit, St George's University of London

Sheetal Kavia, BSc (Hons) Medical Biology, e-Learning Unit, St George's University of London

Luke Woodham, MSC Multimedia Applications & Virtual Environments, e-Learning Unit, St George's University of London

Prof Sean Hilton, St George's University of London

Prof Terry Poulton, e-Learning Unit, St George's University of London

Background: A project termed Generation 4, funded by the Joint information System Committee in the UK, St George's has introduced an interactive online Problem-Based Learning (PBL) curriculum using interactive Virtual Patients (VPs). These sessions are delivered in the Transitional year between campus based learning and clinical attachments, as 'Clinical PBL'. At key management points in the patient case, students consider options, take decisions and explore the consequences of their actions.

Work done: Existing paper cases were reviewed, adapted to an interactive 'branching' VP structure, and published online, accompanied with tutor guides. VPs were delivered to groups of students in conventional PBL sessions facilitated by a tutor. Students worked through the VP, discussing the unfolding patient scenario, generating learning objectives and making management decisions. A variety of e-tools and resources were integrated with e-case delivery to enrich the VP experience, including student wikis.

Results: The process has been very well received by students, tutors and the institution and in controlled trials has shown a positive impact on exam performance. The presentation will highlight the responses and experiences of students, tutors, case writers, and staff involved in this curriculum transformation. **Conclusion:** This curriculum transformation has produced a more adaptive, personalised, competency-based style of learning which more closely matches the role of the practitioner.

Beyond the Software - What Educators Need to Implement Virtual Patients

James B McGee BS, Lab for Educational Technology, University of Pittsburgh School of Medicine

Dmitriy Babichenko, BS, Lab for Educational Technology, University of Pittsburgh School of Medicine

Significant advances in the availability of virtual patient (VP) software and cases have occurred over the last few years including ANSI approval of the MedBiq VP standard and creation of a repository of over 350 cases by eViP (www.virtualpatients.eu). However, at the University of Pittsburgh and other schools, implementers of VPs need more than high quality software and cases to initiate a VP program and integrate within an existing curriculum. We interviewed early adopters of VPs and examined 450 cases made by our local authors, vpSim/DecisionSim users, and public cases from other systems. This covered a wide range of VPs including veterinary cases, quality improvement, CME, blended simulations, and more. Areas of need identified were: 1) models for implementation, 2) templates and processes for effective case writing, 3) access to multimedia, 4) LMS integration, 5) reporting of use, completion and scores, and 6) obtaining institutional buy-in. Some solutions underway by our group and others are 1) best practices guides, 2) shareable multimedia repositories, and 3) development of protocols for integration of VPs with popular LMS's. Most critical is the need for a community of researchers, educators, instructional designers and leaders to share and build a knowledge base of evidence and experience. DISCLOSURE: vpSim is licensed to Decision Simulation LLC; the University of Pittsburgh receives royalties and Dr. McGee is an equity holder and scientific advisor.

Implementation of the MedBiquitous Virtual Patient Standard - Generalizable Best Practices from the eViP Project

Nabil Zary PhD, Karolinska Institutet

The main result of the eViP project (2007-2010) was a bank of repurposed and enriched multicultural Virtual Patients (VPs) from across Europe. The implementation of the Medbiquitous Virtual Patient standard (ANSI/Medbiq VP.10.1-2010) was therefore a necessary step in order to ensure that virtual patient packages were made available in a common interoperable format. The improvement of clinical reasoning using VPs necessitates a large amount of VPs. Sharing of VPs between institutions will therefore likely increase which will require from current and future developers of VP system to comply with the VP standard. The aim of this presentation is to highlight generalizable insights and best practices, gained during the eViP project related to the implementation of the standard such as (a) how expectations from different stakeholders impacts on the outcomes, (b) what factors will influence the implementation process, (c) the type of expertise and collaboration desired for this type of effort, (d) the quality assurance process needed and finally (e) the sustainability model that is required. Providing standard compliant VP packages (<http://virtualpatients.eu>) and implementation best practices will support new implementers, who largely prefer to work from existing examples and documentation rather than interpreting full specifications.

The Use of Distance Learning Technologies to Bring Simulation-based Critical Care Training to a Remote Community in Northern Canada

Timothy Willett MD, CRI Critical Care Education Network, Royal College of Physicians and Surgeons of Canada

Susan Brien, MD MEd CSPQ FRCSC CPE, Royal College of Physicians and Surgeons of Canada

Pierre Cardinal, MD MScEpi FRCPC, CRI Critical Care Education Network

Rick Hodder, MD MSc FRCPC, University of Ottawa

John Kim, MD MEd FRCPC, University of Ottawa

David Neilipovitz, MD FRCPC, University of Ottawa

Shahin Shirzad, MD, University of British Columbia

In remote northern communities, family physicians must recognize and stabilize critically ill patients while awaiting transport. Access to state-of-the-art education, including simulation, is a barrier that presents a further challenge to practitioners. The 16-hour ACES (Acute Critical Events Simulation) course was adapted to meet the priority needs and reflect the clinical context in Iqaluit, Nunavut, Canada. The course was delivered by using e-learning modules then TeleMedicine sessions for didactics, case-based discussions, task training and simulation by virtual patient. The course was evaluated using: post-course questionnaires; pre- and post-course quizzes; post-course high fidelity simulations (measured by behavioural checklist and global rating scale on crisis resource management); and delayed post-course interviews. Participants indicated the course was highly relevant, increased their confidence to manage critical cases, and increased their perceived competence. There was a 28% improvement in scores on the quiz. The vast majority of participants exceeded the expected level of performance on the high fidelity simulations. In the follow-up interviews, participants were able to cite specific practice changes they had made and noticed in others. This model of distance learning reduces the barriers of distance and associated costs while maintaining interactive advanced learning modalities, and is effective at helping to prepare remote clinicians for medical crises.

Applying Semantic Web Technologies to the Meta-description of Medical Education Resources

Evangelia Mitsopoulou, St. George's University of London

Panagiotis Bamidis, Aristotle University of Thessaloniki

Daniela Giordano, Universita di Catania

Stefan Dietze, The Open University

Charalampos Bratsas, Aristotle University of Thessaloniki

Background: The principles behind the semantic web allow data to be structured and linked in such a way that information from multiple sources can be easily interpreted. Given the increasing

importance of sharing resources, semantic web standards facilitate the efficient interchange of resources across different platforms.

Summary of work: The mEducator project was established in 2008 to explore existing standards for describing medical education content. Part of this work was the proposal of a draft metadata schema to describe a diverse range of medical resources. This was implemented in RDF (Resource Description Framework), a technology which represents data according to the ideas of the semantic web. This schema reuses existing standards (Dublin Core, IEEE LOM, Healthcare LOM) and is supplemented with additional information where necessary. Some innovations of it include the capture of repurposing histories, the use of FOAF profiles instead of vCards, and the proposal of new controlled vocabularies describing pedagogical information.

Results: An RDF metadata schema has been created along with controlled vocabularies. Additionally an RDF Instance file has been created demonstrating how the schema can be implemented. Conclusion Using a tailored, standardised metadata schema and semantic web technologies to describe resources can significantly enhance interoperability and act as a catalyst to foster more sharing across institutions, in turn leading to an enriched curriculum.

The Interagency EXCHANGE: Technology and Standards Solutions for Sharing with Multiple Agencies

Dawn Carroll MLS, Department of Veterans Affairs

MHaley Steele, PhD, Department of Veterans Affairs

The Department of Veterans Affairs (VA) currently shares online training with twelve other government agencies. Existing methods of sharing have proven successful, but are tedious, cumbersome, and sometimes complicated. Thus, VA has created a model and begun initial development of the “Interagency EXCHANGE” system, which incorporates a shared repository, metadata search and creation tool, and content viewing and testing abilities. From a metadata standpoint, the Interagency EXCHANGE system encompasses all educational training through the use of VA LOM, including healthcare and accreditation through the inclusion of the MedBiquitous healthcare LOM, as documented in ANSI/MEDBIQ LO.10.1-2008: Healthcare Learning Object Metadata Specifications and Description Document. The VA LOM with healthcare extension provides a standard way of describing educational resources, thus offering a way for the sharing and exchange of educational resources among government agencies. This presentation includes successes in Interagency Sharing, challenges encountered, and implementation of the Interagency EXCHANGE system and efforts.

HeLMS - Development and Implementation of a Health e-Learning Management System Framework for the Clinical Workplace

Ian Graham MD, Postgraduate Medical Council of Victoria

The development of e-learning systems, tailored to the clinical workplace, has been fragmented, opportunistic and uncoordinated. The HeLMS Framework has been developed to build

understanding of the potential of these technologies and to ensure that they are implemented in a well planned, timely and cost-effective manner across all healthcare disciplines and at all levels of training and professional development. The framework identifies requirements and specifies high level objectives for such systems as they impact on individual trainees and supervisors, hospitals practices and accrediting bodies. The HeLMS framework comprises six domains: e-portal (accessibility, collaboration & calendars); e-Learning (curriculum, authoring & resources); e-Portfolios (assessment, credentialling, reflection & planning); e-Practice (log-books, simulation & scope of practice); e-Performance (supervision, appraisal, metrics & KPIs); and e-Deployment (allocation, macro- and micro-rostering). Each domain has its own specific requirements in terms of database design, data interchange standards and functionality. Workplace-based clinical training presents special challenges for the planning and development of an effective HeLMS. The definition, standardisation, integration and use of 'Clinical Learning Objects' will facilitate these developments along with Web 2.0 technologies, the use of digital media repositories and Medbiquitous standards, specifications and guidelines. The HeLMS framework is easily communicated, readily understood and well received by key stakeholders. It has formed the basis for business case and funding proposal to undertake a proof of concept study spanning rural, regional and urban Australia.

Online Mini-cex Plus: A Novel Tool for the Documentation of Observed Clinical Skills Competencies that Provides Feedback with Remediation Assignments

Christof Juerg Daetwyler MD, Office of Educational Affairs, Drexel University College of Medicine

Anthony Donato, MD, Internal Medicine, The Reading Hospital and Medical Center

Gregory McGee, B.A, Office of Educational Affairs - IT, Drexel University College of Medicine

The assessment of clinical skill competencies is usually done either through observation of trainees when interacting with Standardized Patients during an OSCE (for example during CSA Step 2 at the NBME), or through direct observation of how physicians in training interact in actual patient care. In that case, an experienced physician usually documents the interaction using a written Mini-CEX format. Giving physicians prompts and behavioral anchors has been shown to increase both overall comments and accuracy of the rater, but linking trainee errors with specific, targeted remediation is limited by the evaluator's knowledge of existing remediation methods. In spring of 2009, physicians from Drexel University College of Medicine and Reading Hospital and Medical Center came together to meld the recently validated Minicard, a prompted, behaviorally anchored version of the Mini-CEX with "doc.com", to create a seamless online tool designed to work on smart phones for direct observation with links to targeted remediation. This tool is available for review at <http://webcampus.drexelmed.edu/doccom/cex.aspx> The current version is a fully functional direct observation tool that reads the assessment information into a database, saves a draft, and allows to edit the draft into a final assessment with remediation assignments and to send it of to the trainee. In the version that we'll show at the meeting, it will also provide longitudinal data on performance changes.

Tracking Clinical Case Logging and Professionalism in a Distributed Education Mode

Lise McCoy MTESL, Clinical Affairs Unit, School of Osteopathic Medicine in Arizona

Frederic N. Schwartz, DO, Department of Family and Community Medicine, School of Osteopathic Medicine in Arizona

Overview: Improving the quality of training for primary care physicians is an important goal, as the United States faces increasing deficits in numbers of family physicians. The School of Osteopathic Medicine in Arizona (SOMA) trains all its undergraduate medical students at community campuses that provide medical home services to vulnerable underserved populations during MS2-4. During their experiences, medical students see a large volume and variety of patients. Students use technology to log patient encounters daily through SOMA's online database, E*Value. Student clinical logs include patient demographics, diagnoses, procedures, and clinical presentations. To date, more than 400,000 clinical case logs have been submitted electronically in the first 18 months of the program. The large quantity of case logs collected during student rotations provides the college with valuable information regarding the variety of cases seen. Another key aspect of the clinical training program relates to professionalism. The college strives to increase student professionalism with respect to their clinical case logging. We teach the students that documentation regarding clinical case logs is a critically important clinical skill, as it provides basic training in keeping accurate patient records. A familiar medical profession adage goes: if it wasn't documented, it didn't happen.

The Study: SOMA tracks both clinical case logs and clinical performance evaluations within E*Value, collecting data from MS3 and MS4 students at eleven remote sub-campuses. This allows investigations on the relationship between professionalism and volume of undergraduate case logs per region. In this study, SOMA investigates the relationship between clinical case log volume and student professionalism ratings as evaluated by clinical preceptors during the third and fourth years. This study also highlights successful ways that technology supports collection and review of student assessment data in a distributed education model.

Methodology: After each rotation, MS3 and MS4 students are rated by preceptors using the SOMA Clinical Performance Evaluation, and this data is tracked within E*Value. This evaluation contains specific items relating to professionalism. SOMA proposes to rank student performance for 200 medical students with respect to their professionalism scores on the Clinical Performance Evaluation. During their third and fourth years, medical students are required to log every patient encounter in E*Value. SOMA will tally the student case log volume for diagnoses and procedures logged during MS3 and MS4, and rank student performance using this measure. Next, SOMA will compare the two rankings and report any correlations between volume of case logs and student professionalism scores. The study will also report notable variations in clinical case logging and/or professionalism among SOMA's eleven sub-campuses.

Implications: This presentation will review the educational implications from studying evaluations performance data in relationship to case log data. It will also summarize points related to using technology to track clinical performance evaluation data and case log data over a

distributed, multi-campus model. This line of inquiry may lead to some insights about case log data collection and its role in medical education, and whether electronic case logging can be more widely used for collaborative interactions, assessments, and projects.

A Proposed Conceptualization for the Standardized Digital Representation of Competencies

Timothy Willett MD, CRI Critical Care Education Network, Royal College of Physicians and Surgeons of Canada

Rosalyn Scott, MD, FACS, US Department of Veterans Affairs

Valerie Smothers, MedBiquitous

Rachel Ellaway, PhD, Northern Ontario School of Medicine

Competency- and outcome-based education is becoming common in health care education. Health education governance bodies are publishing competency frameworks for broad implementation, while delivery organizations are developing bespoke frameworks. Currently, there is no technical specification for competency frameworks or competency-related data. The MedBiquitous Competencies Working Group is an international group of health educators and technologists, accredited by the American National Standards Institute. Its goal is to develop a technical specification for competency data. The goal is not to develop a single canonical competency framework, but to develop a standard way of electronically publishing competencies and frameworks. The Working Group has used literature reviews, use cases, discussions, surveys, reviews of published frameworks and expert consultations to conceptualize a standard way competency data may be represented electronically. The conceptualization suggests a standard way competencies, frameworks and associated data can be expressed electronically. It is hoped that this will facilitate: rapid and broad dissemination of published frameworks; importation of frameworks into learning management systems; mapping of competencies to learning and assessment objects/activities; cross-mapping of competency frameworks; competency-based searches for learning events or materials; sharing of competency-based portfolios; and other related functions.

The Curriculum Inventory Portal: An International Health Professions Education Curriculum Inventory

Terri Cameron MA, Academic Affairs Association of American Medical Colleges

The AAMC's Curriculum Inventory Portal (CIP) is a new tool that will greatly enhance health professions educators' options for benchmarking and educational research. Building on the success and structure of AAMC's MedEdPORTAL, the CIP will use MedBiquitous standards for competencies and learning objects to ensure that commercial and institution-specific curriculum management and learning management systems can exchange data, with the goal of eliminating the need for data entry. Instead, the focus of the CIP will be on serving as a repository for health professions education with a diverse set of reporting options. The CIP's reporting options will

provide a new tool for health professions educational benchmarking and research by including detailed demographic data that will allow institutions to benchmark against schools with similar demographics and allow researchers enhanced profiling ability. The CIP will allow health professions curricula to be entered in a manner that demonstrates the linkages between competencies and school, course, and session objectives. Mapping based on content will also be built into reporting options. The first phase of CIP development is focused on developing a curriculum inventory for US and Canadian medical schools. Additional phases will incorporate graduate medical education and practicing physician curricular data; other health professions curricular data; and curricular data from other geographic regions. The final product will be a resource for benchmarking and educational research related to health professions education across the continuum of healthcare education around the world. The AAMC spent a year soliciting feedback from medical educators in the US and Canada as the CIP was being designed and continues to solicit feedback from other health professions in other geographic regions as the CIP is being designed and implemented.