



Tomorrow's Doctors, Tomorrow's Cures™

**Group on Information Resources  
Annual Meeting  
Keys to the Future: Preparedness, Sustainability,  
and Relevance**

March 18 – 21, 2006  
Ballantyne Resort  
Charlotte, North Carolina

Association of  
American Medical Colleges

# **Group on Information Resources Annual Meeting Keys to the Future: Preparedness, Sustainability, and Relevance**

## **Table of Contents:**

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Detailed Meeting Agenda	1
Poster & Exhibit Descriptions	11
Speaker Biographies	17
Ballantyne Area Restaurants	23

# Final Agenda

## Sunday, March 19

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9:00 am – 4:30 pm	Registration Open	<i>Ballantyne Foyer</i>
1:30 – 2:00 pm	<b>Welcome</b>	<i>Ballantyne A</i>
2:00 – 3:00 pm	<b>Keynote Address</b> <b>Changes, Challenges, and Opportunities for Academic Medicine</b>	
	Speaker: <b>Mark Frisse, MD, MBA, MSc</b> Director, Regional Initiatives Vanderbilt Center for Better Health	
3:00 – 4:30 pm	<b>Panel</b> <b>Perspectives from Research, Education, and Clinical Care: Where We Came from, and Where Are We Headed?</b>	
	Panelists:  <b>Edward Halperin, MD</b> Vice Dean for Education Duke University School of Medicine  <b>David Fenstermacher, MD</b> Director, Biomedical Informatics University of Pennsylvania  <b>DuWayne Willett, MD, MS</b> Assistant Dean for Clinical Service Metrics University of Texas Southwestern Medical Center	
5:30 – 6:30 pm	Welcome Reception <i>Sponsored by Siemens</i>	<i>Fairway B</i>
6:30 pm	Dinner on your own	

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**Monday, March 20**

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7:00 am – 4:00 pm    Registration Open    *Ballantyne Foyer*

8:00 – 8:30 am    Update on AAMC Activities    *Ballantyne A*

*Continental Breakfast available from 7:30 – 8:30 am in Ballantyne Foyer.*

8:30 – 10:00 am    **The Evolving Role of IT in Distributed Medical Care**

Speaker:

**Daniel A. Reed**

Vice Chancellor of Information Technology and Chief Information Officer  
University of North Carolina at Chapel Hill

10:00 – 10:30 am    Break    *Ballantyne Foyer*

10:30 am – 12:00 pm    **Concurrent Workshops A - D**

**Workshop A:**    *York*  
**Dimensionally-Modeled EHR Data for Clinical Process Improvement**

**Dwayne Willett, MD, MS**

Assistant Dean for Clinical Services Metrics  
University of Texas Southwestern Medical Center

**Ronald Peshock, MD**

Assistant Dean for Medical Informatics  
University of Texas Southwestern Medical Center

Improving the quality and efficiency of healthcare delivery processes drives the current push for implementing EHRs. While several EHR successes have been published, notable failures and missteps have also occurred. The effects of EHRs on healthcare processes thus may not be initially positive in all settings. A way to gauge the effects of an EHR on an organization's varied patient service, clinical care, and financial processes could prove helpful in more rapidly and reliably realizing an EHR's potential benefits. Some believe this type of dynamic reporting on process performance, with drill-down to individual areas, is automatically available after an EHR is installed – after all, “one has the data electronically.” However EHRs are fundamentally transactional systems. Thus they are not designed as data warehouses for flexible managerial decision support, and such capability is not provided by EHRs out-of-the-box. The demonstrated benefits of dimensionally-modeled

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**Monday, March 20 (con't)**

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(star-schema) data warehouses over transactional source systems in delivering data useful for process monitoring will also likely prove true of EHR-derived data. This presentation will cover some approaches used for star-schema development from EHR data (using Epic as the example), with examples of clinical process monitoring capabilities enabled using dimensionally-modeled data. Attendees will learn: -- how to identify clinical service and care processes which can be monitored with EHR-derived data – how to derive volume, throughput, cycle time, and quality data about those processes using dimensional data, with specific examples using Epic – barriers and lessons-learned in turning data into improved performance.

**Workshop B:***Ballantyne C***Dr. I Pod: Piloting Hand-Held Multimedia At the University of Michigan Medical School****Chris Chapman, B.G.S.**

Media Services Manager

University of Michigan Medical School

**John B. Westfall, B.S.**

Multimedia Services Position Lead

University of Michigan Medical School

The University of Michigan Medical School is developing a pilot program to understand and evaluate the technical challenges and educational opportunities that are emerging with innovations in the distribution of audio, video, and images via “podcasting” and “coursecasting.” This presentation will describe the pilot and also present demonstrations with handheld devices and initial findings of the pilot program. In the pilot we will: 1) Coursecast a set of undergraduate lecture in both audio-only and video formats. We will collaborate with Apple Computer to distribute these recordings via authenticated entry into the iTunes store. We will also experiment with the distribution of materials through the medical school’s student portal. Our goal will be to evaluate the effectiveness of the various publication methods; 2) Identify subject matter and then develop and evaluate handheld tutorials and demonstrations (video, still images with audio narrations, audio) to be used by students in clinical settings; 3) Evaluate the utility of other handheld devices. Currently iPod and iPod-like devices are very popular for users who wish to play audio and video. Other handheld devices such as Personal Digital Assistants (PDAs) and handheld computers offer additional features such as wireless communication and access to medical reference resources (e.g., ePocrates). We will compare and evaluate the usefulness of these devices; 4) Create a “Dr. iPod” showcase in our Learning Resource Center to publicize

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**Monday, March 20 (con't)**

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and educate students, faculty, and staff who are interested in the use of handheld devices and accessories in medical education.

**Workshop C:** *Ballantyne D*  
**Notebook Computing in Medical Education – An integral component of the educational fabric at West Virginia University’s Health Sciences Center**

**James K. Hackett**  
Associate Vice President  
WVU Health Sciences Center

**Amir Ramezan**  
Director – Academic Technologies  
WVU Health Sciences Center

**Laura Roth**  
Director – Information Systems Operations  
WVU Health Sciences Center

Medical students use notebook computers as an integral component of their studies. Integrating these tools into the curriculum required establishment of a technology infrastructure to support online learning, collaboration, and online test taking in a secure, ubiquitous computing environment. In 1998, the Health Sciences Center established the Student Computer Program to assist students in furthering their education through use of powerful computing resources. Students entering the School of Medicine are issued a notebook computer for use as an integral part of the curriculum. The computer program provides a portal for online education, access to our Library’s electronic collection, resources that include electronic versions of medical resource materials; wireless network access within the facility, off-site access and on-site certified technical support/maintenance including warranty and insurance coverage. A secure open source web based portal was implemented to establish the Single Point of Access, creating multiple levels of access that ensured end-users only see relevant information. This portal allows faculty to efficiently add educational contents and relevant resources, activate interactive modules on demand such as assessments, surveys, chat, forums, and journals for students to access and utilize. Student examinations are administered and reviewed electronically in the classroom in a secure environment using the student’s laptop computer. Medical student licensure examinations are administered online beginning the process after the student’s second year of medical school by sitting for the USMLE examination. Having the students take their exams in our secure online environment help simulate and prepare our students for USMLE examinations.

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**Monday, March 20 (con't)**


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**Workshop D:***Ballantyne E***Architecting Information Systems for Business Continuity****Ron Price**

Associate Dean and Chief Technologist  
Loyola University Health System

**Arthur Krumrey**

Vice President and CIO  
Loyola University Health System

Loyola University Medical Center (LUMC) has implemented a significant number of strategic information systems over the past four years. In architecting and implementing these systems, LUMC has utilized a number of approaches including highly-available clusters, mirrored storage area networks (SANs), virtual IP load balancers, terminal server farms, content addressable storage (CAS), and redundant data centers. This session will overview several systems (e.g., EMR, PACS, intranet portal, and network infrastructure) and discuss the design considerations that were developed to meet the institution's business continuity objectives. The session will further review the performance of these designs over the past several years. Session would be of interest to any institution or individual using these technologies and implementing large-scale systems. Proposed format would be 45 minutes of formal presentation followed by 15 minutes of "question and answer."

12:00 – 2:00 pm

GIR Business Luncheon

*Ballantyne B*

2:00 – 3:30 pm

**Simulation Coming of Age***Ballantyne A*

Speaker:

**Carla Pugh, MD, PhD**

Assistant Professor of Surgery  
Associate Director of the Center for Advanced Surgical Education

Simulation has made great strides in the last decade and is rapidly becoming an effective tool for medical training. This session will examine the relationship between simulation-focused research and enhancements in medical training and education. A review will be provided of high-fidelity medical simulations that lead to effective learning and strong quantitative association between hours of simulation-based practice and learning outcomes. The presenters will also discuss the future role of simulation in medical education.

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## Monday, March 20 (con't)

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### **Building a Framework for Physician Credentialing**

*Ballantyne A*

Peter Greene, MD  
Associate Dean for Emerging Technologies  
Johns Hopkins University, School of Medicine  
Executive Director of MedBiquitous

Todd Tischendorf  
Director of Information Technology  
American Board of Medical Specialties

Web services provide an opportunity for medical schools to perform credentialing and outcomes measurement on demand. MedBiquitous, a standards development organization for healthcare education, has worked with the AAMC, American Board of Medical Specialties (ABMS), and the Federation of State Medical Boards (FSMB) to develop the Healthcare Professional Profile, a technology standard that enables exchange of clinician data and on demand credentialing. This presentation will provide a description of the standard, how it is being used by the ABMS, plans for its use by FSMB, and how it could be used by the AAMC and medical centers to verify faculty credentials and conduct outcomes measurement of students.

### **Fostering and Supporting Campus-wide Utilization of an Educational Tracking System**

*Ballantyne A*

Andria M. Thomas, PhD  
Director, Evaluation Services  
Medical College of Georgia

Beth Brigdon  
Vice President of Information Technology/CIO  
Medical College of Georgia

Statement of the issue: Education accreditation agencies such as the SACS, ACGME and LCME require educational training programs to document their teaching efforts, evaluation procedures, and the quality of their educational programs. Though five training programs (Medicine, Dentistry, Allied Health, Nursing, Graduate Studies) are co-located at our institution, historically their systems for meeting accreditation requirements have been independent and school-based. We sought to implement a system that could integrate all our educational and administrative requirements into a single system. Outcomes: We selected the Medical Education Administration Suite from One45 for our integrated educational management program. We have been able to customize

## Monday, March 20 (con't)

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the system to meet our institution s needs. It has been integrated fully into the School of Medicine, multiple departmental residency programs and is scheduled to be integrated into four additional schools by December 2006. Users have access to real-time tracking and documentation of student and resident clinical experiences, performance of procedures, and achievement of clinical competence. Course and clerkship schedules are easily developed and posted. Additionally, student and resident usage of portfolios and educational materials can be easily tracked for documentation. Importance to other institutions: This report will provide a summary of the evolution from a school-based system to a campus-wide enterprise system and the integral role IT played in this transition. Detail regarding timelines, scope documents and action items will be provided.

2:00 pm	Setup for Poster Session Opens	<i>Fairway Ballroom Foyer</i>
3:30 – 4:00 pm	Break	<i>Ballantyne B</i>
4:00 – 5:30 pm	Hot Topics	<i>Ballantyne A</i>
6:00 – 7:30 pm	Reception and Poster Session	<i>Fairway Ballroom Foyer</i>
7:30 – 9:00 pm	Dinner <i>Sponsored by IBM</i>	<i>Fairway Ballroom B</i>

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**Tuesday, March 21**


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7:00 am – 12:00 pm	Registration Open	<i>Ballantyne Foyer</i>
7:00 – 9:00 am	Survey Committee Meeting	<i>Ballantyne C</i>
7:30 – 9:00 am	Continental Breakfast <i>Sponsored by WTC</i>	<i>Ballantyne B</i>
9:00 – 10:00 am	<b>Plenary</b> <b>Looking Beyond Borders: Building Systems for Global Healthcare</b>	<i>Ballantyne A</i>
	Speaker:	
	<b>Dr. Jean-Claude Healy</b> Director, Office of the Director -General, External Relations and Governing Bodies, WHO	
	<p>The European Union and later the World Health Organization have formed a strategy aimed at implementing eHealth programs in the member states for the benefit of citizens, patients, healthcare professionals, and other stakeholders. Prof. Jean-Claude Healy, as former Head of Unit of Health Informatics in EU and currently as Director, Office of the Director-General, External Relations and Governing Bodies at WHO, has been instrumental in forming these strategies. Prof. Healy will discuss the strategy elements, the governmental commitments to these strategies, the anticipated effects and expected benefits for the stakeholders.</p>	
10:00 – 10:15 am	Break	<i>Ballantyne B</i>
10:15 – 11:45 am	<b>Concurrent Workshops E – G</b>	
	<b>Workshop E:</b> <b>AAMC MedEdPORTAL</b>	<i>Ballantyne C</i>
	<b>Robby Reynolds, MPA</b> Director of Educational Resources AAMC	
	<b>Deliya Ryan, MPH</b> MedEdPORTAL Managing Editor AAMC	
	<p>New forms of digital publishing have provided unprecedented opportunities for publication of scholarly works online. The Association of American</p>	

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## Tuesday, March 21 (con't)

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Medical Colleges (AAMC) has developed MedEdPORTAL ([www.aamc.org/mededportal](http://www.aamc.org/mededportal)) to serve as a prestigious publishing venue through which faculty might disseminate their educational works. MedEdPORTAL was designed to promote collaboration and educational scholarship by facilitating the exchange of peer reviewed educational materials, knowledge, and solutions. Through MedEdPORTAL faculty and medical schools may both publish and share instructional and assessment materials.

MedEdPORTAL invites faculty to submit materials such as tutorials, cases (PBL, SP, OSCE, etc), lab manuals, assessment instruments, faculty development materials, web sites, computer-based materials, etc. These products will undergo a rigorous peer review process comparable to that used by established print-based journals. Reviewers will assess each submission using accepted standards of educational scholarship.

Publishing within MedEdPORTAL has several benefits for faculty including recognition of peer-reviewed work that may be considered by promotion & tenure committees, useful feedback for enhancement or expansion of the resource, and expanding the audience of potential users.

This presentation will provide an overview of the MedEdPORTAL system and explain how faculty receives scholarly recognition publishing resources through MedEdPORTAL. The presentation will also include examples of various types of materials and the submission and peer review process in addition to covering copyright issues.

**Workshop F:** *Ballantyne D*  
**Creating a State-of-the-Art Academic Health Sciences Center for Eastern North Carolina**

**Dorothy A. Spencer, PhD**  
Director, Laupus Library  
East Carolina University

**Donna W. McDonald**  
Assistant Director, Laupus Library  
East Carolina University

In Spring 2006, the Schools of Nursing, Allied Health Sciences, and the William E. Laupus Health Sciences Library, will come together in a new state-of-the-art education building on the campus of the Brody School of Medicine and the Pitt County Memorial Hospital in Greenville, NC to create an academic health center designed to maximize interdisciplinary

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**Tuesday, March 21 (con't)**

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collaboration. Clinical simulation, streaming video, a wireless network, and an information commons are but some of the technology resources featured in the new facility designed for both on-campus and distance education. The presentation will feature a rich visual overview of this exciting new facility and describe design, funding, and construction challenges faced in completing this exciting education, research, and clinical training center.

**Workshop G:  
Identity Management***Ballantyne E***Bill Weems, PhD**

Assistant Vice President, Office of Academic Computing  
Associate Dean of Information Technology, Medical School  
University of Texas Health Science Center

**Vince Sheehan**

Chief Information Officer and Associate Dean for Information Technology  
Indiana University School of Medicine

A review of current primary concepts of Identity Management (IdM) and will be discussed. An overview of recent federal policy related to identity management and how it will impact medical centers. The discussions will also consider practical issues such as the management of role definitions. This will be followed by examples of architecture and policies currently employed at academic medical centers demonstrating how to manage federated relationships.

11:45 am – 12:00 pm Closing

*Ballantyne A*

12:00 pm Adjourn

# Poster and Exhibit Descriptions

## POSTER 1

### **Creating Collaborative Environments in an Academic Health Sciences Center Library**

**Issue:** Fostering collaboration for innovation in scientific discovery, teaching, learning, and professional practice depends on environment, technologies, and connections. The ultimate goal of this collaboration center is discovery of new knowledge and new ways of transmitting knowledge. The Center provides an opportunity to demonstrate the library's value as an essential partner in managing knowledge to advance health.

**Outcomes:** The Health Sciences Library is neutral space, centrally located and has inviting facilities with classrooms, media kitchens, group study rooms, conference rooms, a coffee shop, comfortable furnishings, health information resources, staff expertise, and enhanced technologies for collaboration. Renaissance Computing Institute financed and installed technology. Campus Classroom Technologies and Library's IT staff provide on-call hardware and applications support. Partnerships are being developed with UNC Roadmap initiatives and other interdisciplinary programs using the technology-enhanced interdisciplinary collaboration center. Similar centers will be built at Duke, NC State University, and RENCi headquarters. A 10' x 8 high-resolution (12.5 M pixels) display wall was first demonstrated on July 15, 2005. First use of Center as virtual conference host site using Access Grid videoconferencing technology was in October 2005. The room is equipped with a SmartBoard. Desired future outcomes include Center users' positive perceptions of value, effectiveness, and quality of the Library's contributions to the research, education, and service projects. Indicators will include ongoing use and funding success.

### **Importance or relevance to other institutions**

This project defines key elements for physical space and services to promote interdisciplinary collaboration, and new roles for libraries in academic health centers.

### **Authors:**

Margaret Eilene Moore

Barrie Hayes

Carol Jenkins

Wallace McLendon

University of North Carolina at Chapel Hill Health Sciences Library

POSTER 2

**Keys to Relevant Informatics Instruction: Lessons Learned from the Public Health Workforce**

**Issue:** A needs assessment of informatics training for the local public health workforce was conducted by the New York Medical College Health Sciences Library and School of Public Health. Public health informatics competency recommendations outlined in an existing CDC-funded document were adapted as an instrument to evaluate current informatics knowledge of county health workers relative to the recommendations. In addition, we sought to understand how relevant workers found each of the recommended competencies to be to their current job responsibilities. This poster will present data from the needs assessment for the four levels of the public health workforce defined by the Council on Linkages: senior level, supervisory and management, front line, and clerical staff.

**Outcomes:** The results of needs assessment indicate that in aggregate there are large gaps between the recommended and the actual levels of informatics proficiencies. In addition there are considerable, but smaller, gaps between the levels of relevance and self-reported competencies in many areas.

**Importance or relevance to other institutions**

The findings of this research have been used to assist in the design of targeted educational interventions for the local public health workforce. In addition, these findings will provide a foundation for the design of informatics instruction for students in the School of Public Health.

Diana J. Cunningham  
Associate Dean and Director  
New York Medical College

## POSTER 3

**Past-Perfect to Future-Perfect, it is always tense. Curriculum Change, with e-Curriculum Centralization**

**Background:** New LCME requirements to track and remediate clinical competencies along with the AAMC's MSOP report and Vision of the 21st century make clear the need for new IT methodologies. The last decade has witnessed tremendous change with more schools with integrated curricula that require centralized oversight.

**Objective:** How can schools provide centralized IT support to a new integrated curriculum?

**Challenges:** The existing curriculum had inconsistent e-learning sites that were hard to find and rarely updated. Some faculty created online courses, but not consistently or efficiently. One department created a courseware tool where part of the medical school curriculum was hosted. Students never knew which class was hosted where or what the next course would hold for them. Many of the faculty members had no administrative IT support.

**Results:** The University of Colorado invested in a new educational office to create, improve, centralize and support a new centralized integrated curriculum, including an e-learning environment. The office purchased curriculum management tools and developed course delivery and assessment mechanisms. They are in the process of implementing a PDA evaluation and tracking system. A new requirement for institution-provided laptops and PDA's will soon be implemented.

**Conclusions:** The consensus development of new policies and commitment by the Dean to support change can result in a centralized system even when it requires the hiring of additional IT support staff. Student and faculty access to new e-resources must be administered and supported centrally. Faculty's technical training needs must be addressed with maximum support provided during transitions.

Samantha Hanson  
IT Director, School of Medicine  
University of Colorado School of Medicine

## POSTER 4

**Teaching and Learning Medical Informatics: A Survey of Schools Seven Years After Publication of the AAMC Report**

The recommendations of the AAMC-constituted Medical Informatics Advisory Panel were published in 1999 to provide program-level informatics learning objects for medical students. Seeking to examine the extent to which teaching and learning of these objectives have been integrated into medical education programs, the AAMC GIR surveyed medical schools across the country in 2005. Seventy-eight schools responded, with more than 85% indicating an overall strategy to integrate medical informatics objectives into their curriculum. However, if success is measured by clearly-articulated written learning objectives or medical informatics objectives included in student assessments, the results are lower. For example, fewer than half of respondents indicated that they had learning objectives and assessed whether students could retrieve patient-specific information from clinical information systems. Concomitantly, fewer than half indicated student education in retrieving patient datasets or in recording orders for patient care. While less than half of respondents indicated learning objectives for recording patient findings in an EHR, over half stated that they had assessment measures for this objective. Two thirds of respondents indicated that they had learning objectives and assessment measures for use of texts and journal articles. However, only half indicated they had learning objectives for the use of diagnostic expert systems and only six out of the 29 respondents to this question had formal assessment. Additional data, derived from a January 2006 follow-up survey, and a discussion of the implications for medical education will be considered.

Helene M. Hoffman, Ph.D.

Assistant Dean - Educational Computing, Adjunct Professor of Medicine  
University of California, San Diego School of Medicine

Julie J. McGowan, Ph.D., FACMI

Associate Dean - Information Resources and Educational Technology  
Indiana University School of Medicine

## POSTER 5

**Effective Quality Improvement in Transplantation**

Effective quality improvement requires measurable quality indicators to be identified, measurements performed, the results of these measurements made visible to people that can influence quality, and process changes implemented to improve quality as indicated by the parameters being measured. Long-term quality can only be assured by continuously performing these steps and refining the indicators being measured. The only effective way to continuously generate this type of feedback loop is to identify indicators that are reflected in existing databases and having those indicators displayed automatically, showing the current values as well as historical measurements of these indicators. Manual systems are difficult and time-consuming to maintain and are often dependent on individual staff members. At University Medical Center in Tucson, Arizona, we have set up such a system of data-derived quality indicators that are displayed on a quarterly basis. Starting in November 2003 we have developed a set of web-based quality dashboards that run without any manual intervention to show quarterly statistics on 12 quality indicators. Success in implementing this type of quality improvement requires a partnership between clinical management and software development. Clinical management needs to identify potential quality measures, but in order for them to be generated automatically software development resources need to work closely with the clinical managers to identify whether data is available in existing systems that can be queried or in interfaces from which data can be extracted and stored.

Mark Nahirny  
Software Engineer  
University Medical Center

Jennifer Christian  
Manager, Blood and Marrow Transplant  
University Medical Center

**Exhibit Title:**

AAMC MedEdPORTAL

**Exhibitors:**

Robby Reynolds, MPA  
Co-Director, MedEdPORTAL  
Division of Medical Education  
Association of American Medical Colleges

Deliya Ryan, MPH  
MedEdPORTAL Managing Editor  
Division of Medical Education  
Association of American Medical Colleges

New forms of digital publishing have provided unprecedented opportunities for publication of scholarly works online. The Association of American Medical Colleges (AAMC) has developed MedEdPORTAL ([www.aamc.org/mededportal](http://www.aamc.org/mededportal)) to serve as a prestigious publishing venue through which faculty might disseminate their educational works. MedEdPORTAL was designed to promote collaboration and educational scholarship by facilitating the exchange of peer reviewed educational materials, knowledge, and solutions. Through MedEdPORTAL faculty and medical schools may both publish and share instructional and assessment materials.

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## Speaker Biographical Sketches

**CHRIS CHAPMAN, B.G.S.**, is the Media Services Manager for the Office of Medical Education at the University of Michigan Medical School (UMMS). In this role he manages a team of media and graphic designers, programmers and technologists that support educational computing (educational software development and support, computer laboratories, and consultation) at the Medical School.

Mr. Chapman has collaborated with faculty on the design, development and deployment of computer-assisted instruction for over 18 years. Several of his projects (CARDIAX and Neurologic) have won Smithsonian Awards for computer software. He is one of the principal designers of the Professional Skill Builder (PSB).

**DAVID FENSTERMACHER** is currently the founder and director of the Biomedical Informatics Facility, as shared resource facility of the Abramson Cancer Center and the Department of Laboratory Medicine at the University of Pennsylvania ACC. He also directed a bioinformatics core facility for the University of North Carolina at Chapel Hill for more than five years. During his tenure in biomedical informatics, Dr. Fenstermacher designed and directed the implementation of several bioinformatics distributed computing systems to support basic and clinical research, including multiple institution research projects. He has also designed data management systems for more specialized projects including integrating clinical (patient and lab test data), genomics (SNP and microarray) and proteomics (2D-gel electrophoresis and mass spectrometry data) data to support multiple projects focused on a single goal, modifier gene discovery. Data management systems designed by Dr. Fenstermacher have included: collection and storage of subject data; tracking and reporting of milestones for multiple studies, development of web-based forms for input, storage and retrieval of all data collected from or about subjects, customized data representations and data sharing using Grid technologies.

Dr. Fenstermacher received his doctoral degree from the University of North Carolina at Chapel Hill. Prior to joining the fields of bioinformatics and biomedical informatics, Dr. Fenstermacher spent thirteen years as a molecular biologist/geneticist working on several projects, including phage display technologies, FISH for cytogenetic applications, cDNA cloning and transcriptional analyses. His background as a bench scientist brings a unique perspective to the design of computational tools to support basic and clinical research studies. Dr. Fenstermacher has held several faculty positions at the University of North Carolina and the University of Pennsylvania.

**MARK FRISSE, MD, MBA, MSc** is the Accenture Professor of Biomedical Informatics at Vanderbilt University. He also serves as Director of Regional Informatics Programs through the Vanderbilt Center for Better Health and in this capacity is responsible for coordinating regional, state, and national projects aimed at the application of information technology to advance patient care. Working through the office of the Governor of the State of Tennessee, he is director of one of the Nation's five state and regional demonstration programs in health information technology, focusing on the development of a comprehensive health information exchange system for southwest Tennessee.

Prior to assuming his position at Vanderbilt, Dr. Frisse was Vice President in First Consulting Group's Clinical Transformation Practice working to advance quality and safety through the

application of technology, process redesign, evaluation techniques, and evidence-based practice. His experience includes quality and financial analysis, key metrics assessment, clinical visioning, strategy, vendor selection, pre-implementation planning, and clinical quality program alignment. In addition to participating in numerous short-term planning and evaluation engagements, Dr. Frisse served as an operational Vice President overseeing two large-scale transformation and clinical systems implementation efforts.

Prior to joining First Consulting Group, Dr. Frisse was Chief Medical Officer and Vice President, Clinical Information Services at Express Scripts, one of the Nation's largest independent pharmaceutical benefits management concerns. He served as general manager for their Practice Patterns Science subsidiary – a firm applying integrated medical and pharmaceutical claims data to reduce practice variation to a client list that included Blue Cross / Blue Shield of Missouri and Humana. He participated in the formation of RxHub – a new approach to electronic transmission of prescriptions from physicians to pharmacies. He was also responsible for the Express Scripts' DrugDigest consumer Web site and was active in the development of Express Scripts' consumer e-business strategy.

A Board Certified Internist, Dr. Frisse was a Professor of Medicine and Associate Dean at Washington University School of Medicine and he served as academic director of the Health Services Executive MBA program at the John M. Olin School of Business. In collaboration with the BJC System, he and his colleagues developed several innovative applications for adverse drug event prevention.

Dr. Frisse received his MD and MBA from Washington University and received a Master's Degree in Medical Computer Science from Stanford University. Active in medical informatics for 20 years, he is the author of approximately 50 scientific papers, reviews, and book chapters on medical informatics. He served as a consultant for numerous government agencies and health care concerns. He was a member of the National Research Council's Committee on Enhancing the Internet for Health Applications and more recently was an author of a national report on ePrescribing prepared by the eHealth Initiative.

**DR. PETER GREENE** is the Associate Dean for Emerging Technologies at the Johns Hopkins University School of Medicine. He is the founding executive director of the MedBiquitous Consortium, a non-profit, ANSI-accredited standards development organization consisting of 50 leading organizations in healthcare creating technology standards for healthcare education and competence assessment. He is also the executive editor and key architect of CTSNet, an online community of 40 professional cardiothoracic surgery societies. Dr. Greene is a graduate of Harvard College and Yale Medical School and has a longstanding interest in using information technology to educate medical professionals. Dr. Greene is a cardiac surgeon on staff at the Johns Hopkins Hospital and is Associate Professor of Surgery at the Johns Hopkins School of Medicine.

**JAMES K. HACKETT** is the Associate Vice President for Finance and Administration for the Robert C. Byrd Health Sciences Center of West Virginia University. Mr. Hackett is both the Chief Financial Officer and Chief Information Officer for the University's Academic Health Center composed of schools of Medicine, Dentistry, Nursing and Pharmacy, associated clinical facilities and a regional campus 160 miles distant in Charleston, WV.

Mr. Hackett's previous appointments include Associate Dean for Finance and Administration at the University of Kentucky, College of Medicine, and Administrator for the Department of Medicine at the University of Rochester following almost 10 years of service as an Army Officer.

Mr. Hackett has served as national and southern region chair of the GBA and as national chair of the Senior Financial and Administrative Officers Group of the Association of Academic Health Centers.

He received his BS from the US Military Academy and his MBA from the Tulane University Graduate School of Business Administration.

**DR. EDWARD HALPERIN**, Vice Dean of the Duke University School of Medicine, is responsible for undergraduate medical education, continuing medical education, graduate medical education, the relationship of the Dean's office to the clinical departments of the School of Medicine, the library, the processes for awarding of endowed chairs, and a variety of budgetary and financial issues. He graduated, summa cum laude, from The Wharton School of the University of Pennsylvania with a B.S. in Economics, received his M.D. degree, cum laude, from the Yale University School of Medicine where he was a member of Alpha Omega Alpha, and is a candidate for an M.A. in liberal studies from Duke. After an internship in internal medicine at Stanford University Medical Center, he served as resident and chief resident in radiation oncology at the Massachusetts General Hospital. Dr. Halperin joined the Duke faculty in 1983 and rose to become L. R. Prosnitz Professor and Chairman of the Department of Radiation Oncology from 1996 through 2002 when he became Vice Dean. He is the author/editor of two of the best selling textbooks in radiation oncology: Pediatric Radiation Oncology (now in its fourth edition), and Principles and Practice of Radiation Oncology (fifth edition in preparation). He is the co-author of >170 articles in the peer reviewed literature within the fields of pediatric radiation oncology, cancer etiology, medical history, and medical ethics.

Dr. Halperin is a Fellow of the American College of Radiology, a recipient of the Editors Recognition Award for Distinguishing Medical Reviewing, and has received multiple awards for his work in audiovisual medical education.

**DR. JEAN-CLAUDE HEALY** is a graduate of the University of Paris (PhD and MD). He has over thirty-five years professional experience in biomedical Research & Development, radioprotection, and information technology application. He has held Ministerial and senior administrative appointments at the National and the European Union levels, as well as professional clinical posts. He was head of the Health Telematics unit of DG INFSO at the European Commission in Brussels from 1995-2004, and is presently a Director at World Health Organization Head Quarters, Geneva.

RON PRICE's responsibilities include direction of multiple technology teams that identify, implement and support computing initiatives that advance the institutions' strategic goals. Under his leadership, the Office of Information Systems has led SSOM and LUHS in development of financial and clinical data repositories, award-winning World Wide Web sites, advanced networks and desktops. A significant focus of his current activities is in the creation of "portal" technologies to enable creation of enterprise-wide, WWW-based applications. Mr. Price joined the SSOM in 1987 and has held positions ranging from Assistant Director of Medical Informatics to his current position

of Associate Dean of Information Systems, additionally he holds the title of Chief Technologist for Loyola University Medical Center. Mr. Price's accomplishments include numerous publications and national presentations regarding his work at the school of medicine and health system.

**DR. CARLA M. PUGH** is currently Assistant Professor of Surgery and Associate Director of the Center for Advanced Surgical Education at Northwestern University. She also holds an appointment in the School of Education at Northwestern. Dr. Pugh obtained her undergraduate degree in Neurobiology at U.C. Berkeley and her medical degree at Howard University School of Medicine. Upon completion of her surgical training at Howard University Hospital, she went to Stanford University and obtained a Ph.D. in Education. Her thesis project was, "Evaluating Simulators for Medical Training: The Case of the Pelvic Exam Simulator." Dr. Pugh holds a patent on the method of simulation used to design the Pelvic exam simulator and is currently engaged in the design of other simulators using similar technology. Dr. Pugh is currently working with the National Board of Medical Examiners to support their interest in using her simulators on the licensing examinations for United States physicians. Dr. Pugh has a broad interest in the use of technology for medical and surgical education, and is especially interested in how medical professionals learn. In addition to her appointments at Northwestern, Dr. Pugh also holds an appointment at the Telemedicine and Advanced Technology Research Center (TATRC) as Special Assistant to the Director. At TATRC, Dr. Pugh manages the Advanced Distributed Learning Portfolio and the Medical Skills Proficiency area.

**AMIR RAMEZAN** is Director of Academic Technologies in Robert C. Byrd Health Sciences Center of West Virginia University. In this capacity, Mr. Ramezan oversees four divisions: Instructional Technologies division which assists faculty with the design process from needs assessment, objectives development, and content organization to implementation and evaluation of educational material; Advanced Technologies division which develops, implements, and supports information technology initiatives and products to meet strategic needs in education and research; Web Development division which creates, maintains, and implements web-based instructional material, in conjunction with the faculty, to enhance the required curriculum for distance education, and; Network Services division which install and maintain systems and infrastructure to support academic, administrative, and research use of the network and user workstations.

Mr. Ramezan received a Bachelor of Science degree in computer science. He designed and established the first computer curriculum for the Webster Community Colleges located in West Virginia and Florida. Mr. Ramezan taught computer courses for ten years and has been involved with West Virginia University for the past eight years.

Mr. Ramezan has more than twenty five years experience in designing and implementing custom computer applications. Among his accomplishments, he has spearheaded the establishment of a Secure OnLine Environment (SOLE) which is the Single Sign On portal within Health Sciences Center.

**ROBBY REYNOLDS, MPA** received his undergraduate degree from Henderson State University in Arkansas in Public Administration. He completed his Masters in Public Administration with an emphasis in Health Care Administration at Florida State University.

Robby Reynolds has been with the Association of American Medical Colleges (AAMC) for over 3 years working as the Assistant Director of the Curriculum Management and Information Tool (known as CurrMIT) in the Division of Medical education. Over the past year, he has taken on the new responsibility of Director of Educational Resources and Co-Director of MedEdPORTAL. During this time he has been instrumental in the development of the MedEdPORTAL and Virtual Patient initiatives which promote the sharing of high quality medical educational materials. Prior to working at the AAMC, Robby served as the Director of Curriculum Advancement at Virginia Commonwealth University School of Medicine while developing their electronic curriculum.

**LAURA ROTH** is Director of Information Systems Operations at the West Virginia University Robert C. Byrd Health Sciences Center. Mrs. Roth's responsibilities include overseeing and managing the operations of a state-of-the-art computer network, telecommunications, computer-based learning center, and customer assistance programs supporting students, faculty, and staff of the WVU Health Sciences Center and all of its affiliates, both locally and statewide. Her responsibilities cover both the academic and administrative aspects of the voice, video, and data networks. Mrs. Roth directs the Health Sciences Center's student laptop computer program. Since 1998, all entering medical, physical therapy, and occupational therapy students are required to lease a pre-configured laptop for the entire duration of their program. Mrs. Roth oversees and manages both student and faculty expectations of this program.

Additionally, Mrs. Roth oversees the IT infrastructure for Oman Medical College located in the Sultanate of Oman. WVU Health Sciences Center is providing the curriculum, academic leadership, academic quality control and information technology systems to the first private medical school in the Sultanate of Oman. Mrs. Roth's role is overseeing OMC's IT needs including network infrastructure, two-way video conferencing, policy, laptop program, and customer assistance program.

**DELIA RYAN, MPH** graduated from Montreal's McGill University in 2002 with a degree in Anatomy and Cell Biology. She went on to complete a Master of Public Health degree in Epidemiology at the George Washington University. There, her research was focused on the racial disparities in breast cancer survival as they related to histological characteristics of tumors in African-American women with breast cancer, compared to their Caucasian counterparts. In 2004, she was awarded a fellowship through the National Cancer Institute and the George Washington University where she is currently pursuing her doctoral work.

Deliya spent the early part of her career working in the division of food safety at the Center for Science in the Public Interest. Her area of focus was food borne illness outbreak epidemiology, before accepting the position of Staff Associate with AAMC's Division of Medical Education in 2004. Her responsibilities included project management and program development of several Public Health Education initiatives supported through a cooperative agreement with the (CDC). She has staffed several projects aiming to enhance the intersection of public health and medical education as it relates to obesity, injury prevention and control and family violence, among others.

Ms Ryan's role recently extended to Managing Editor for AAMC's MedEdPORTAL. She was involved in the development stage of the application and is now a key member of the

MedEdPORTAL team, responsible for the submission process and peer reviews of hundreds of innovative medical education resources.

**VINCE SHEEHAN** is a 1977 graduate of IU with a major in Religious Studies. His 30 year career includes experience with city government, banking, and healthcare before joining Indiana University in 1998 as Director of University Information Systems. His duties as UIS Director included management of the university's Library Information System, the development and management of Oncourse (IU's e-learning environment), departmental systems development, and management of the data center on the Indianapolis campus. In 2002, he joined the Indiana University School of Medicine as Chief Information Officer and Associate Dean for Information Technology. In addition to managing information technology across the school, he is responsible for coordinating technology activities between the school, five partner hospitals, and 32 physician groups. He is a Fellow of the Frye Leadership Institute.

**DR. ANDRIA THOMAS** is Director of Evaluation Services for the School of Medicine at the Medical College of Georgia. Dr. Thomas is a clinical psychologist with extensive experience in program evaluation. In her role as Director of Evaluation Services, Dr. Thomas oversees the evaluation of courses, faculty, and students and the overall evaluation of the medicine curriculum. Dr. Thomas has spearheaded the design and utilization of an online system of evaluation for the school of medicine. She has also designed and implemented a web/PDA-based evaluation system of residents for the Family Medicine residency program. In addition, she has clinical and research experience in the areas of obesity, communication, diversity and patient comfort.

Dr. Thomas received a doctorate in clinical psychology from the University of Toledo. She completed a fellowship in eating disorders at the Medical College of Georgia before joining the faculty in 2001.

**TODD TISCHENDORF** is Director of Information Technology at the American Board of Medical Specialties. Mr. Tischendorf establishes and directs the strategic long term goals, policies and procedures for the division. These activities include leadership for the development of technology and data standards; technology acquisitions; development and publishing of product roadmaps; project management; application and database development; and systems operation and support.

Prior to his career at ABMS, he worked in the healthcare and financial sectors including running a technology company and as a partner in a software development firm. He graduated from DeVry Institute of Technology in 1993 with a Bachelor of Science in Business Operations. Mr. Tischendorf serves on several MedBiquitous working groups and is currently the chair of the MedBiquitous Professional Profile Working Group.

**JOHN B. WESTFALL, JR.** is the lead multimedia programmer for the University of Michigan School of Medicine Learning Resource Center (LRC). In this role he designs and develops computer based instructional materials for medical education. As part of the LRC team he also assists faculty in the design and best practice usage of these technologies to supplement and enhance traditional medical education. Prior to joining the University of Michigan, his focus was in developing computer-based education for legal, scientific, and engineering businesses.

## Restaurant List

Below are some restaurants in the Ballantyne area.

### Restaurants in Ballantyne East

Providence Bistro	California Cuisine	704-540-2244
Zapata's	Mexican	704-752-6869
The Fox and The Hound	Sport Type	704-544-8902
Saigon Café	French and Vietnamese	704-542-7080
The Wok	Chinese	704-341-9900
Wize Guys	Brick Oven pizza, Italian	704-544-1009
Adam's	American –Mediterranean	704-248-2500
Pei-Wei Asian Diner	Asian Food	704-543-1121
Flatrock Grill	Seafood and Steak	704-542-4848

### Restaurants in the Stonecrest Shopping Center

Miro	Authentic Spanish food	704-540-7374
Firebirds	Colorado Style Steak, Seafood	704-752-7979
Barolo	Italian	704-752-9797
Jo Jo China Bistro	Chinese, Vegetarian	704-541-6488
Qdoba	Mexican	704-752-3860
City Tavern	Continental	704-543-8587

Directions: Make a right on 521 to 485 East get off at the Rea Road exit, make a right into Stonecrest shopping center. Another way is make a left on 521 (front of Hotel) make a left on Ballantyne Commons Pkwy go about 2 miles and you will see StoneCrest on your left.

### Restaurants in the Pineville Matthews Road Area

Outback Steakhouse	Steaks	704-895-1888
Thai House	Thai Cuisine	704-542-6300
Kabuto	Japanese	704-542-3400
Nakato	Japanese	704-543-8899

Directions: Make a right at the 521 go about 2 miles down make a left on Pineville Matthews Rd you will see the Restaurants on your right. To Nakato you will make a right on Pineville Matthews Rd and you will see the restaurant on your left next to Starbucks.

Olive Garden	Italian	704-544-2334
Red Lobster	Seafood	704-541-0021
Applebee's	American	704-544-0034

Directions: Make a right at the 521 take 485 west take 64-B exit you will see the restaurants on your left.

### Restaurants in the Phillips Place Area

Palm Restaurant	American Cuisine	704-552-7256
Upstream	Seafood	704-556-7730
P.F.Chang's	Chinese	704-552-6644

Directions: Make a right on 521 (front of Hotel) 521 will turn onto Johnston Rd and it will run onto Park Rd( it is the same rd) make a right on Sharon Rd and follow Sharon Rd make a right on Fairview Rd and go about ¼ of a mile you will see Phillip Place on your right.

### Restaurants in the Southpark Area

Smoky's Grill	Continental	704-364-1346
Noble's	French Cuisine	704-367-9463
Manzetti's	Variety	704-364-9334
Italian	Toscana	704-367-1808

Directions: Make a left on Ballantyne Commons Parkway, make a left on Rea Road, it will run into Colony road make a left on Morrison Blvd. Noble's will be on your right and Manzetti's will be farther down the road on your right. You can also go a different way make a right on 521 (front of hotel) 521 will turn onto Jonhston Rd and will run onto Park Rd make a right on Sharon Road follow Sharon Rd make a left on Morrison Blvd. To Noble's make a right on Morrison Blvd and you will see Noble's on your left.

### Restaurants in The Arboretum Area

Cajun Yard Dog	Cajun Cuisine	704-752-1750
Dakota's	Southern Cuisine	704-541-9990
Mickey & Mooch	Variety	704-752-8080
Phil & Tony's	Brick Oven Pizza	704-541-3111
Good Old Day's	American	704-543-4100
Le Peep	only breakfast, brunch & lunch	704-540-0470

Directions: Make a left on 521 (front of hotel) make a left on Ballantyne Commons Pkwy make a left on Rea Rd go about 3 miles down make a right on Pineville Matthews Rd go about 2 miles the Arboretum will be on your right.