Maryland Medicine
The Maryland Medical Journal Volume 13, Issue 1

The Evolution of Medical Education

ALSO INSIDE:

Personal Perspectives: 5 Generations of Maryland Physicians

Book Review: *The Better End*

Business Banking to the Nth Power.

Your financial world is changing. Good thing you have choices.

Northwest's dedicated team of commercial lending and business banking professionals possess both business smarts and community focus, so you get the personal attention you deserve and the comprehensive products, services, and access you need. Nationally recognized year after year for customer satisfaction, Team Northwest can help.

BUSINESS BANKING
COMMERCIAL LENDING
EMPLOYEE BENEFITS
WEALTH MANAGEMENT
CASH MANAGEMENT SERVICES
MERCHANT SERVICES
REAL ESTATE LENDING
SBA LOANS

Ann-Marie P. Monroe | **John Byrne** | **Keith Dukes** | **Len Leljedal** | **Mary Jo Taylor** | **Steven Manuel**

Mike Brown | **Mike McAndrew** | **Mike Tilstra** | **Rich Hunt** | **Dick Oppitz** | **Leesa McShane**

NORTHWEST SAVINGS BANK

Where people make the difference.

Northwest Direct: 1-877-672-5678 • www.northwestsavingsbank.com

9612 REISTERSTOWN ROAD
OWINGS MILLS
(410) 356-4248

Member FDIC

Volume 13 Number 1

INSIDE

Dr. Robert Shochet discusses the concepts of learning communities.

Departments

Features

continued on page 3

Scan the code with your smart phone and download *Maryland Medicine* to your mobile device.

INSIDE

Abraham Flexner Would be Proud

Joshua Sharfstein, M.D.

The father of modern medical education, Abraham Flexner, wrote that when confronted with preventable disease, the "intelligent and conscientious" physician should endeavor "equally to heal the sick and to protect the well."

Now is a good time for this balance between prevention and treatment to be re-emphasized in medical education.

My training largely focused on mechanisms of disease and the scientific basis of therapy. Now students should also learn how to use epidemiological data, health information technology, and evidence on prevention.

Increasingly, doctors are being paid more when their patients are healthier, not just when their patients receive services or undergo procedures. Medical schools should adapt to this new reality. Students should be trained to look for opportunities to avoid illness, including identifying at-risk populations early and designing creative interventions.

A recent graduate who can treat patients, analyze clinical data, and re-organize care for better outcomes is a modern triple threat – and would do Abraham Flexner proud too.

Joshua Sharfstein, M.D., is Secretary of the Maryland Department of Health and Mental Hygiene.

Features Continued...

WRITE TO US

The Editorial Board of *Maryland Medicine* welcomes your letters, comments, and opinions. Readers may respond to the authors or the editors by e-mail at sraskin@montgomerymedicine.org or by mail to Editor, *Maryland Medicine,* c/o Montgomery County Medical Society, 15855 Crabbs Branch Way, Rockville, MD 20855.

United We Stand

PRESIDENT'S MESSAGE

Harbhajan S. (Harry) Ajrawat, M.D.

If there is one insight that I have gleaned in the first part of my presidential term, it is that we are much stronger speaking with one voice than not. This became very clear to me in October, when the federal government issued its revised regulations for Accountable Care Organizations (ACOs). The draft version of these regulations had been issued in March of 2011 and was justly criticized by the physician community as falling far short of what was needed to implement the vision of the ACO concept. MedChi, for instance, in its comments to the Department of Health and Human Services, cautioned that the draft regulations contained significant flaws that could endanger the success of the project. Among the problematic elements of the draft regulation was a requirement that primary care physicians participate in no more than one ACO and risk sharing requirements that many physician practices would likely find unduly hazardous in relation to potential returns. MedChi also encouraged CMS to give "full attention . . . to assuring that physicians and other participants in ACO models are protected from the threat of investigation or liability for perceived violations of federal and state program integrity and competition laws."

MedChi's comments were closely aligned with those of the AMA and many state, local, and specialty medical societies. Many individual practices also commented. There is no doubt in my mind that this is why the revised regulations were much more favorable to physician interests when they were issued in final form. The regulations now allow ACOs "first dollar" shared savings, cut the number of required quality measures, reduce the number of ACO participating physicians who must achieve electronic health records meaningful use status, and will ensure that ACO governing bodies are controlled by physicians and other health practitioners.

MedChi's comments [re: ACOs] were closely aligned with those of the AMA and many state, local, and specialty medical societies. Many individual practices also commented. There is no doubt in my mind that this is why the revised regulations were much more favorable to physician interests when they were issued in final form.

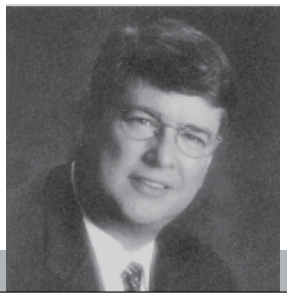
The change in the regulations has opened the door to participation in the ACO for many practices that otherwise would not have been able to responsibly assume the risks of participation. This will in turn be beneficial to both those physicians and the larger community as the ACO model, if properly implemented to increase the chances for success, will enable care to be delivered at a higher quality with a lower cost.

This is one example of physicians speaking with unity through their national and state medical societies, the AMA and MedChi were able to achieve much more than they would have had they tried to act on an individual basis. For better or worse, policy makers are impressed by a single message being put forward by groups representing large numbers of concerned parties. Physicians, united behind the message that the ACO program was good, but needed significant change in order to enlist the critical mass of participants necessary, were able to persuade the federal government to make those changes. Now both the medical community and the nation as a whole will benefit.

In Maryland, using the strength of its numbers, MedChi has branched off into new areas. Our subsidiary, MedChi Network Services, is leading the way as a Management Services Organization (MSO) in enlisting large numbers of physicians into the meaningful use incentive programs of the state and federal governments. It is now spearheading attempts to organize ACOs in areas of Maryland where there is interest.

Maryland physicians are taking notice. MedChi membership has increased in each of the last three years. Even more strikingly, Maryland's AMA membership has increased so much that we will receive one new delegate slot in the AMA House of Delegates. We are the only state to have done so. Maryland physicians, we should be proud of ourselves!

Let's keep up the good work. Remember, to make changes on the state level, participate actively in the organizations that give Maryland physicians the chance to speak with a single voice—MedChi and its components. To make change at the national level, join the AMA.



How We Learn

EDITOR'S CORNER

Bruce M. Smoller, M.D.

A recent report from the Institute of Medicine (IOM), the very same organization that has been pumping the virtues of electronic records, indicates that, well…maybe it isn't all it's cracked up to be…at least not in its present form…not ready for prime time.

A recent article in the *Washington Post* reports on the discovery that electronic records cause doctors to order more x-rays, not fewer, as was thought by the political pooh-bahs touting this stuff to the public for a while now.

A squib from the Pew Research Center reports on the discovery that "teens and young adults brought up from childhood with a continuous connection to each other and to information through the online world will be nimble, quick-acting multitaskers who count on the internet as their external brain and who approach problems in a different way from their elders." But the survey also produced predictions that this generation will develop a thirst for instant gratification and quick fixes, a loss of patience, and a lack of deep thinking ability. Ouch! A lack of deep thinking ability! That's not so good for most professions. It's deadly for physicians. More to the point, it's decidedly deadly for patients.

Once an idea gets hold, and goes "viral," or at least systemic at some slower speed, it is awfully difficult to dislodge that idea from the communal psyche. Look at the IOM report detailing medical errors. It has become gospel and is cited by every hungry lawyer, amateur medico and politician-on-the make from Grand Central Station to next Sunday. We forget that its own authors repudiated good chunks of its underpinnings, or that it really applied to hospital systems. It is cited as the basis for the need to change. Never mind some of the grossly inflated inferences and the hyperbolic warnings which, while they make good theater, are based not entirely on what used to be called facts.

Medical education, as is made clear in this issue of *Maryland Medicine*, is moving swiftly towards a digital, connected, synthetic universe. This seems to be a change for the better. Maybe.

I am not a luddite. I like computers and I like the connection to a broader universe of facts and fun. I even have Frank Netter's *Anatomy* on my iPad (in case one of my anxious patients asks me the location of the organ of Zuckerkandl, I can bring out my iPad and show him …it's right next to Angry Birds). I think the use of computer and simulation tools in the service of education and in the physician's office could be a necessary stride forward in the march from Flexner to wherever we are going.

It's just that I can't help conjuring up visual memories of hordes of people all glued to the little glowing screen of a handheld whatever, mesmerized by the streaming binaries which form themselves into words and pictures. You have all seen them. As Pogo memorably said, however, "We have met the enemy and he is us!" We all do that. It is, however, more prevalent in the younger set. Disconnected. "Facted" up, but disconnected to each other. Therein lies the rub, of course. As physicians we learn our facts from books, or screens or speakers, or what have you. But we learn our humanity, our sensitivity, our ability to relate, and our observational skills through contact with other ***people***.

By all means, let us bring on the tools. Pedagogical advances and technological advances can all serve to abet the progress of biologic advances. The trend is hard to buck, both for reasons intrinsic and extrinsic. Intrinsic because the tools of information management can help us be better at what we do. Extrinsic because Medicare and other drivers are imposing punitive damages for not converting. This is going to happen whether we like it or not.

Let's then make a pact. Let's, by all means, foster medical education's use of the tools of today and tomorrow. Let's begin the process of producing logically thought out electronic health records, accessible across platforms by multiple users. Let's encourage the use of simulacra instead of animals and humans in experimentation and education. And then let's look up from our screens and robots and look at each other and at our patients and really learn.

EDITORIAL STATEMENT

Editorial Offices
Montgomery County Medical Society
15855 Crabbs Branch Way
Rockville. MD 20855-0689
Phone 301.921.4300, ext. 202
Fax 301. 921.4368
sraskin@montgomerymedicine.org

Advertising
800.492.1056

Classified and Display Advertising Rates
Susan Raskin
301.921.4300, ext. 202
sraskin@montgomerymedicine.org

All opinions and statements of supposed fact expressed by authors are their own, and not necessarily those of *Maryland Medicine* or MedChi. The Editorial Board reserves the right to edit all contributions, as well as to reject any material or advertisements submitted.

LETTERS

Dignity and Humanity at the End of Life

I thoroughly enjoyed the recent issue of *Maryland Medicine* and Mark Jameson's series of statements by physicians in various stages of their careers. It is a wonderful series of statements about our work and our lives with all the variations in our work, skills and ambitions.

A number of your physicians noted their joy in practicing medicine. One is 77 years old and has no plans to retire. Why retire if you enjoy what you are doing? Some prefer the solo practice, some the group. Teaching attracts a few; so does research. But each reminds us that we all got into this to help relieve our patients' suffering.

It seems that I have had the opportunity to practice in a gray zone. I became a member of the Hemlock Society years ago. The reason I was asked was because I was an anesthesiologist living in Texas at the time the state decided to use an anesthetic for executions of some of its prisoners on death row. Since the state thought that death was appropriate for certain people, the minister of my church thought it might also be appropriate for someone trying to stop her terrible suffering and considering death as perhaps the best of her options.

I have found deep satisfaction in advising certain persons to stop the suffering when all the good care they had been receiving did not seem to suffice. And at the same time I found that medical students did not like talking about death as a normal part of life. "We are here studying medicine to cure people, NOT hastening their deaths!"

I believe it should be discussed in departmental rounds as part of our caring for people who are suffering.

Lawrence Egbert, M.D., M.P.H.
Baltimore, Maryland

Letters to the Editor are each the opinion of the author and may not reflect the opinion of the Maryland Medicine *Editorial Board or MedChi, The Maryland State Medical Society.*

Introduction

Medical Education: A Look With New Eyes and iPads

Tyler Cymet, D.O.

You can't step into the same river twice. Both you and the river have changed. And the river is constantly flowing with new water replacing old. Even though the river has the same name, the same location, and even the same appearance, it is not the "same" because the water continues to move.

And so it is with medical education.

We all have feelings and thoughts and connections about the training we received to become physicians. Whatever we felt about the training we received doesn't change the fact that it played a large part in making us who we are today.

So, what is it like being trained to become a physician today? Does our experience practicing medicine shade our view, or do changes in the structure of our society and the educational system? How would new technologies change the experience? And what is the effect of new philosophies and scientific research regarding teaching and learning?

Where does medical education fit into the healthcare system as a whole? Many people who thought they had finished their formal medical education when they received their diplomas are reconnecting with their medical schools and where they trained in this world of maintenance of licensure, continuous certification, and other systems of monitoring lifelong learning.

We know that some of what was and may still be taught today in medical school is incorrect and incomplete. And the success of the care we provide as physicians is the result of critical thinking skills we brought in or developed outside of the formal medical school curriculum.

Many of the new teaching techniques and paradigms are attempts to teach and value thinking. Working in groups helps develop answers to the problems we see in our patients.

Somewhere along the way we realized that teaching medicine to medical students is different from many other learning environments; our students are adults and learn differently from people who have not yet developed the internal drive to learn.

There are new models of medical education out there. A.T. Still University (ATSU), School of Osteopathic Medicine in Arizona (SOMA) teaches students in groups of 10. The students lead the classes and the teachers' job is to guide the group. Clinical rotations for ATSU and SOMA students are entirely based in community health centers. The Lake Erie College of Osteopathic Medicine has created a Primary Care Scholars Program that combines the fourth year of medical school with the first year of residency, resulting in training that is one year shorter.

Pre-medical course requirements will be modified with the fifth revision of the Medical College Admissions Test, which is expected to launch in 2015. The concept of creating a physician through training in ethics and reflective practice is now part of the formal curriculum, where it used to be part of the hidden curriculum that was expected to occur without any direct attention paid to it. And collaboration with other health professionals has become increasingly important.

Technology has given us new tools to speed up change, but the change is greater than the tools we are using. As new physicians replace older physicians, the culture is changing as well. Evidence and education will change practice patterns. This issue of *Maryland Medicine* will shed some light on the changes that have been occurring in medical education.

Tyler Cymet, D.O., is Associate Vice President for Medical Education for the American Association of Colleges of Osteopathic Medicine. Dr. Cymet can be reached at tcymet@aacom.org or 301.968.4182.

Glenwood Systems

SOFTWARE | SERVICE | PROCESS | RESULTS

Glenwood Systems, LLC
100 Grand Street, Waterbury, CT 06702
Toll Free: 888-452-2363 Fax: 203-754-0077
www.glenwoodsystems.com

Technology has changed practice management

Dear Doctor:

Medical practice costs continue to severely outpace the rate of inflation and reimbursement doesn't keep up! When you work hard shouldn't you be rewarded? Isn't it time technology lowered medical practice costs and you had the opportunity to **collect more**?

Glenwood Systems has worked tirelessly since 1995 to create workflow efficiencies for our clients to improve their patient billing results.

Today via our completely **integrated** and fully certified clinical documentation software, practice management software and **billing expertise**, we help our clients **achieve +99%** of the encounter revenue they are eligible to receive.

Most physicians believe they are collecting everything they are eligible to receive! Time and again we find revenue that has leaked through the cracks - **unnoticed**! We focus on what is **uncollected** rather than what is collected - an important philosophy that produces outstanding results.

You have nothing to lose and much to gain! Call today for your free no obligation financial analysis!

Sincerely,

Ron Flormann
Chief Commercial Officer

Glenwood Systems

SOFTWARE | SERVICE | PROCESS | RESULTS

Contact **Glenwood Systems** Today at **888-452-2363**

www.glenwoodsystems.com moreinfo@glenwoodsystems.com

Evidence-Based Medicine:
How it is Different From What We Have Always Done?

Tyler Cymet, D.O.

Doctors problem-solve all day long. They look for clues and make decisions based on the information they have collected. So how does evidence-based medicine (EBM) differ from clinical decision-making? And is it good enough, caring enough, personal enough to allow for good medicine to be practiced?

The movement for more evidence-centered decision-making gained steam in 1992[1] and now the evidenced-based model has become the standard method of decision-making in medicine—and a standard on which many payment decisions for medical care are based.

The roots of EBM originated in 1972 with British epidemiologist A.L. Cochrane.[1] Cochrane chastised medicine for being too accepting of clinical experience and intuition as bases for making a decision.

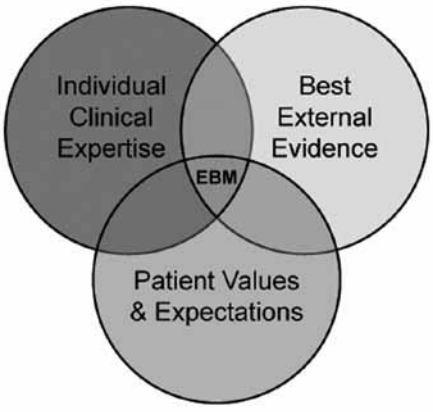
That kind of thinking isn't going to cut it in the new medicine. New skills are needed. The ability to access and utilize data through literature searching is a critical skill in EBM.

How well an intervention works depends on the desired goal. And a goal can be a clinical assessment of symptoms, functional ability, morbidity, and mortality, or even economic or patient satisfaction. EBM is an attempt to apply existing research to clinical situations. It is accountability and transparency in decision-making for both researchers and healthcare providers.

The currency of EBM is the randomized controlled trial (RCT). The RCT will show the probability of an outcome. It de-emphasizes the importance of a patho-physiologic explanation for why an intervention is having an effect.

Data and evidence that doesn't make sense will still be questioned. Although there is no requirement for a valid scientific explanation of why something happens, in evidence-based medicine all you need is data showing that something does happen. Plausibility addresses the issue of whether or not an intervention is the actual cause of something and is separate from the evidence itself.

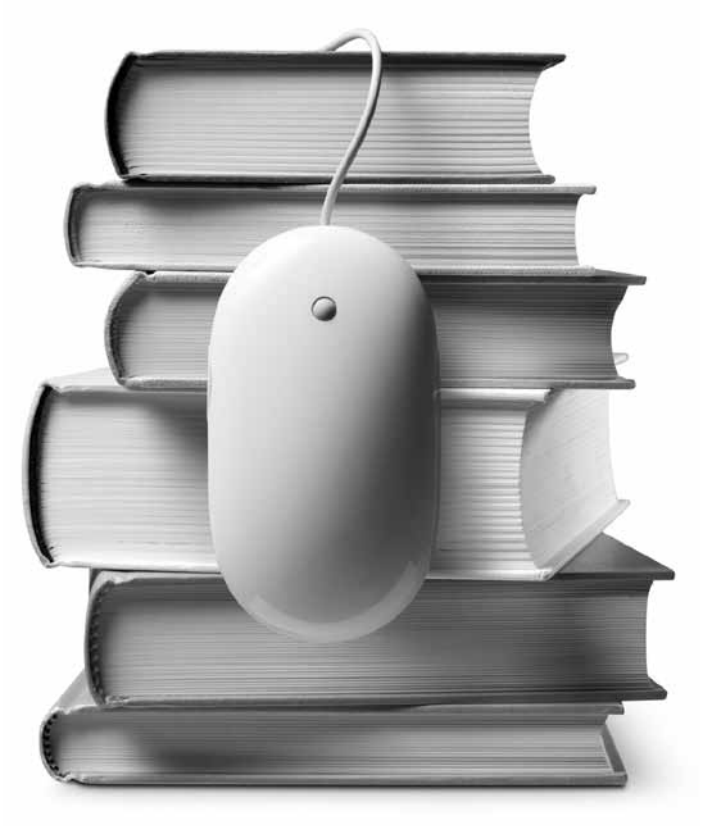
The introduction of EBM has eased the way for protocols and checklists. But clinical skills are still important for making a diagnosis. EBM hasn't done away with the need for clinical expertise, or personal decision-making, but has carved out an area of medicine where the answers to what we can do and what we should do if we want a particular outcome are stronger than in other areas of medicine.



Tyler Cymet, D.O., is Associate Vice President for Medical Education for the American Association of Colleges of Osteopathic Medicine.

Reference:

1. Cochrane, A.L. (1972.) *Effectiveness and Efficiency: Random Reflections on Health Services*. London: Nuffield Provincial Hospitals Trust. Reprinted in 1989 in association with the BMJ. Reprinted in 1999 for Nuffield Trust by the Royal Society of Medicine Press, London, ISBN 1-85315-394-X.



Information Technology in the Medical School Curriculum

Chadia N. Abras, Ph.D.

This article examines the advances in information technology and its proliferation in the medical school curriculum. Information technology is transforming the world of education—leading to untested territories, where new platforms for delivering instruction are effecting a paradigm shift in teaching methodologies.

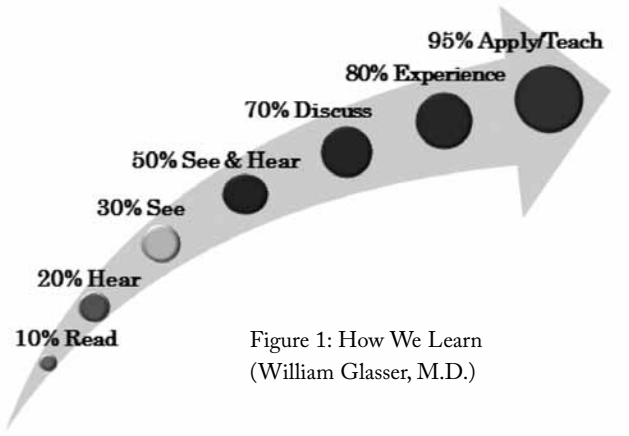


Figure 1: How We Learn
(William Glasser, M.D.)

Introduction

Information technology is shaping the way we think of teaching and learning. It is shifting curriculum design from a model where knowledge was at the center of design to a new model where each learner's specific needs and learning style are the central focus of instruction. This move toward personalized instruction is creating a dichotomy in the world of higher education: how does one reconcile serving the masses and individualizing instruction? Therefore, effective use of technology becomes the key to the success of curriculum delivery; however, it is crucial that the technology is used to enhance learning outcomes and not for technology's sake. Considering how people learn and retain information becomes an important part of determining how technology can best enhance their learning. The following Glasser chart on how we learn may guide the instructional design process and information technology applications.

Information Technology: Delivery Methods

The new advances in Leaning Management Systems (LMS), such as Blackboard, have already affected the way we deliver instruction. These community- and course-building systems include the platform on which the courses are built, but they also integrate web 2.0 tools and tools for connecting students synchronously or asynchronously. Whether the instruction is face-to-face or online, the LMS has become a central part of the instructional design, regardless of delivery method, whether web-enhanced, blended, or online.

Information Technology: Instructional Strategies

The choice of strategies is dependent on: 1) the target population and its needs, 2) the content, 3) the method of delivery, 4) the instructor's teaching style, and 5) the platform used to deliver instruction.

The following is not comprehensive; however, it does include many important strategies needed for effective learning.

Learning Contract

A learning contract is a method by which students and the instructor negotiate the learning outcomes—what each student will learn by the end of the course, the dates of assignment and project completion, how the instructor will assess the learning, and how students will assess their own learning. This method of negotiation supports the theory of self-directed learning, which allows the student to actively participate in the learning process.[1] To negotiate a learning contract, the instructor may use online conferencing tools to start the discussion; such tools are used for synchronous discussions and could include video, audio, chat, and a whiteboard option.

The Power of the Video Library in Medical School

Eight years ago members of the Johns Hopkins University School of Medicine started taping all Year 1 and Year 2 medical school lectures and providing students with the opportunity to view these recordings immediately after class. This video library has helped serve as a catalyst to reduce the time students spend in lecture from over 70 percent of student-faculty contact time to nearly 40 percent. When asked if video taped lectures has reduced class attendance, Dr. Harry Goldberg, Director of Academic Computing at The School of Medicine, replied that "though there may be examples of reduced attendance, the opportunity to now extend the educational experience beyond a recitation of a PowerPoint presentation is significant. By reducing the time spent in lectures, the role of the classroom lecturer is being changed to someone at the center of the learning environment who can now be more active in small group discussions, clinical consultations, patient simulations, and team-based learning. The positive impact on our students is measurable, and other schools are getting the message."

Lecture

In recent years, learner-centered instruction theorists have predicted that the lecture will become an archaic method of instruction delivery, yet the lecture survives and is a preferred method of information delivery in many medical education settings.[2]

Lecture capture tools are abundant; many include the ability to record the desktop, while creating a small video representation of the lecturer. Once lectures are created, they can be uploaded into the LMS, where they can be accessed as needed. Unlike during a face-to-face lecture, the student will have the option to go back to the recording as many times as desired, from any device in any place.

Discussion

The discussion is an essential part of the classroom; it allows the students to synthesize and process information. The face-to-face discussion is usually ephemeral and is limited to the duration of class time; therefore, the instructor may want to create space online for students to continue the classroom discussion.

The traditional tools that enable online discussions are text-based; however, a new line of tools for discussions called voiceboards includes an audio option that allows participants to record a response, type it, or both. Online discussions are more permanent and all students participate. The permanency and visibility of the posts force the students to be more reflective and detailed in their responses.

Collaborative Work

Students learn best by applying the knowledge introduced through lectures, readings, and other media. The more effective way to apply knowledge is through activities, projects, and internships. Activities can be individual or collaborative. Collaborative activities enable the students to apply the acquired knowledge while learning from others in the team.[3]

Collaboration among students does not need to occur only during live instruction. Many tools can enable and enhance team work. A wiki, for example, allows the participants to edit and improve on a common document or project. Blogs enable the team members to journal and reflect on the project, while image and video repositories allow them to upload, share, and store media files. The team members may want to meet and communicate synchronously to troubleshoot and discuss the project by using a chat tool or an online conferencing tool.

Digital Portfolio

Assessing student learning can occur at the course or program level. Specific artifacts and best representations of student work from each course may be gathered in a central area such as a digital portfolio. Digital portfolios can be used for medical faculty development and tenure, for showcasing and assessing students' work, or for creating a collection of one's work to share with potential employers.

The digital portfolio is a central part of a program platform that may also include the LMS and an assessment system bundled to create a seamless process. Artifacts, which may include audio, video, or text files among others, can be stored in a digital library, sent to instructors for feedback and evaluation, then published for sharing. A central part of the portfolio is the reflection on the author's own work.

Summary

Education up to the latter part of the 20th century used strict methods of instruction delivery, relying mostly on tried theories in cognition and social learning. Approaches in constructivism and collaborative learning affirm the success of existing methods of delivering curriculum, yet they also validate the use of information technology as a vehicle to improve student learning.

Chadia N. Abras, Ph.D., is Program Director of Distance Education, Center for Technology in Education, Johns Hopkins University School of Education. For a complete list of references please call 301.921.4300 or email sraskin@montgomerymedicine.org.

References:

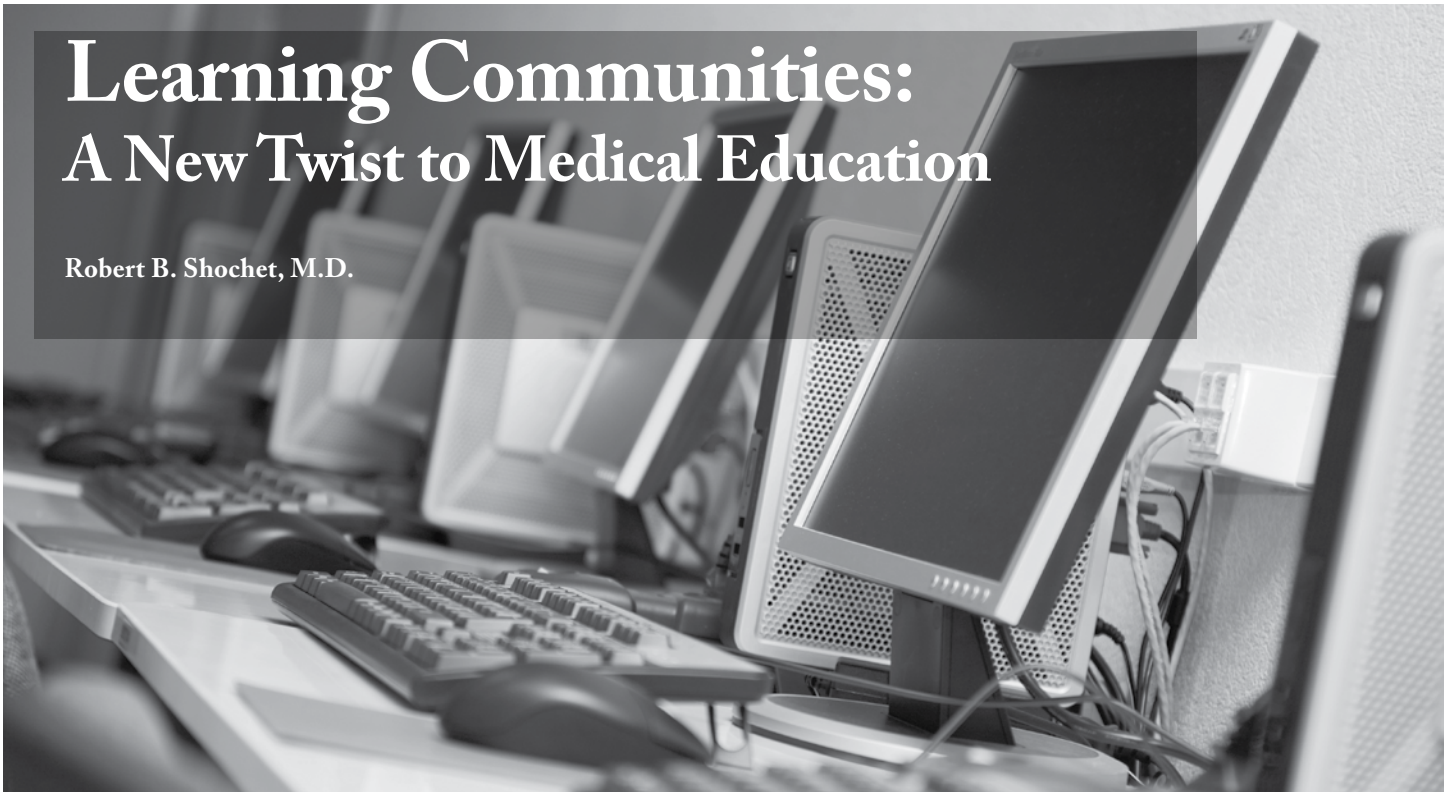
1. Knowles, M.S. (1986.) *Using learning contracts.* San Francisco: Jossey-Bass.

2. Littin, S., and Ende, J. (2010.) The lecture: Tips to make your next presentation go better than your last. In *Methods for Teaching Medicine.* K. Skeff and G. Stratos (Eds.). Philadelphia: ACP Press.

3. Hiltz, R., and Wellman, B. (1997.) Asynchronous learning networks as a virtual classroom. *Communications of the ACM* 40(9): 44–9.

Learning Communities:
A New Twist to Medical Education

Robert B. Shochet, M.D.



"I just want someone to know me here!"
JHUSOM student, 2004 school climate survey

As a means to enhance the learning environment and establish a greater sense of continuity, learning communities (LCs) have recently been established at many U.S. medical schools. LCs offer opportunities for longitudinal relationships with faculty, vertical integration among classes, and a greater sense of coherence between the espoused and enacted values. LCs provide a range of curricular and extracurricular programming including programming related to clinical skills training, professionalism dialogues, community service, and student well-being.

How medical students shape their professional identities, pattern their behaviors, and construct their moral foundations has been a topic of great interest in academic medicine. The learning environment (LE) in medical schools and academic health centers, which encompasses the physical, social, and psychological context in which students learn, is felt to be a key determinant of the moral development of physicians.[1] Teaching in medical schools is largely led by cutting-edge scientists and clinical subspecialists, who bring an inspiring level of expertise to their work although, unfortunately, their roles with students are circumscribed to specific disciplines. Even generalist teachers may limit involvement with students due to economic constraints within their practices or clinical departments. In aggregate, parades of faculty, long hours of study, and rotating work environments contribute to a sense of fragmentation and isolation—explaining the student's perspective above. Such an experience may be at odds with a core goal in medical school of forming one's professional identity, which typically germinates from meaningful engagement with patients, faculty, and peers.

In a recently acclaimed text on the future of medical education, Cooke and colleagues[2] advocate for a more intentional shaping of the medical school LE in order to create greater coherence between enacted values and those espoused in the formal curriculum. They assert that the developmental nature of learning in medical school calls for greater longitudinal connections among teachers, learners, and patients across the four years of medical school. Hirsh and colleagues at Harvard University School of Medicine3 advocate for enhanced continuity for medical students, primarily via faculty, peer, and patient relationships. It is through such longitudinal relationships that students develop a sense of professional intimacy with teachers and peers, receive valued feedback, and gain the emotional comfort to take intellectual risks in their learning.

To address this need for continuity, several U.S. medical schools have established learning communities for their students and faculty over the past decade.[4] Broadly defined, an LC is a group of people sharing common values and beliefs who are actively engaged in learning together and from each other. LCs typically offer these core features: a sense of membership, a sense of personal influence, fulfillment of individual needs, and shared events and emotional connections.[5] The origins of LCs date back to 19th century British boarding schools, where house systems were used to sub-divide students into smaller residential groups to better address their personal, social, and emotional needs. Popularized by the fictional Hogwarts School of the Harry Potter novels, houses provided a sense of tradition, identity, and belonging, as well as leadership opportunities.[6] In the 1980s, Evergreen State College in Olympia, Washington, pioneered efforts to shape a modern student-centered LC, and demonstrated that LC participation enhanced retention rates and academic achievement.[7]

The College Advisory Program (CAP), Johns Hopkins University School of Medicine's (JHUSOM) LC, was started in 2005 in an effort to provide dedicated clinical skills teaching, longitudinal career advising, and enhances personal and professional development for students. Modeling the CAP after a similar program at the University of Washington, JHUSOM's leader-

ship made a historic investment in faculty and program resources, recruiting 24 exemplary core teachers to devote 20 percent of their time to this longitudinal involvement with students. As students arrive, they are randomly assigned to one of four colleges, each named after a legendary Hopkins faculty member: Doctors Daniel Nathans, Florence Sabin, Helen Taussig, and Vivien Thomas (honorary Johns Hopkins Doctorate of Laws recipient). Today, six faculty members are affiliated with each college and establish longitudinal relationships with five students in every class. These units of five students and one teacher are termed "advisory molecules." The molecules become cohesive learning groups for the Clinical Foundations of Medicine course in Year 1, and thereafter, they meet at their advisor's home and periodically throughout the curriculum to share learning experiences and career plans.

Within each college, a supportive matrix of student peer relationships provides social programming, community service activities, and a vibrant peer advisory program. An annual College Olympics each fall offers spirited competition between the colleges. The second floor of the new Armstrong Education Building is dedicated to the LCs and creates a sense of home for students. Celebratory events held on the college floors center on student transitions and milestones, including the White Coat Ceremony, transition to wards, and Match Day.

LCs offer a new twist to medical education, offering students a greater sense of belonging and connectedness to faculty, classmates, and students across class years. Through a range of curricular and extracurricular programming, students can pursue interests and leadership opportunities and help to positively shape the LE for current and future students. Creating a relational student-faculty community also invites informal dialogue and reflection, which can be invaluable in mitigating the impact of the many challenging events students encounter in their training.

Robert B. Shochet, M.D., is Assistant Professor, Department of Medicine and Director of the College Advisory Program, Johns Hopkins University School of Medicine, Baltimore, Maryland. He is an Osler Faculty Scholar and is supported by the Johns Hopkins Osler Center for Clinical Excellence. For a complete list of references please call 301.921.4300 or email sraskin@montgomerymedicine.org.

References:

1. Branch, W.T. (2000.) Supporting the moral development of medical students. *J Gen Intern Med* 15(7): 503–8.

2. Cooke, M., D.M. Irby, and B.C. O'Brien.(2010.) *Educating Physicians: A Call for Reform of Medical School and Residency*. Stanford, CA; Jossey-Bass.

3. Hirsh, D.A., B. Ogur, G.E. Thibault, and M. Cox M. (2007.) "Continuity" as an organizing principle for clinical education reform. *N Engl J Med* 356(8): 858–66.

What's New in Medical Education

David B. Mallott, M.D., Richard Colgan, M.D., and Linda Lewin, M.D.

While medical education may appear to be largely untouched over the past 20 years, in reality a tremendous amount of change has occurred in curricula and educational methods at every level, and ongoing change is likely over at least the next decade with a continued transformation of technology and of the U.S. healthcare system. Medical education is increasingly seen as a continuum from medical school through residency, fellowship, and continuing education, and the governing bodies of each have been increasing their coordination to ensure that physicians become and remain lifelong learners.

> Many medical schools... deliver the vast majority of content, especially in the first two years of medical school, through computers, web-based modules, online references, and independent, computer-based, clinical problem-solving exercises.

The most dramatic change for physicians out of school for at least 15 years is the incorporation of digital technology into the curriculum of medical students, residents, and, increasingly, continuing medical education (CME). While textbooks are still published, many medical schools, including the University of Maryland School of Medicine, deliver the vast majority of content, especially in the first two years of medical school, through computers, web-based modules, online references, and independent, computer-based, clinical problem-solving exercises. This trend shows no sign of abating, and with the electronic medical record a part of the clinical world and smart phones on everyone's hip, it is hard to see any other path than a complete switch to digital format in the relatively near future.

One of the most significant changes has occurred in the "middle" of the educational continuum as residencies took a leadership role in asking, and beginning to answer, a very difficult question: how do we know that residents are actually able to do the things that we train them to do when they leave residency for independent practice? In 1998, the Accreditation Council for Graduate Medical Education began the Outcomes Project, leading to the development of six general competencies to guide all residency programs and to a fundamental change in medical education at every level. The project challenges the long-held belief that if learners spend a mandated amount of time in each required clinical activity, they will emerge prepared to practice without direct oversight. Instead, the new paradigm requires the evaluation of actual performance of critical tasks before certifying residents as prepared for practice. The general competencies chosen were Patient Care, Medical Knowledge, Interpersonal and Communication Skills, Professionalism, Problem-Based Learning and Improvement, and Systems-Based Practice. As residencies have become familiar with the competencies and have developed assessment tools to measure them, medical schools and post-graduate organizations have also moved toward outcomes and competency-based structures for teaching, evaluating, and accrediting learners. Competencies now form the

basic structure of many medical school curricula and Maintenance of Certification programs, and are likely to become requirements of ongoing state licensing and hospital privileging in the future.

A new topic that has emerged over the past five years in medical education is the potential use of Inter- Professional Education (IPE). This refers to educating learners in different professions together in order to be sure that practicing physicians are adept at working as part of a healthcare team in which many different professionals may play a part. With the use of multidisciplinary teams in the clinical setting, larger systems providing care up to and including the "medical homes" that are a part of the current healthcare reform, and perceived healthcare provider shortages, the need for various healthcare professionals to meaningfully interact rather than coexist has grown stronger. Accrediting bodies have already recognized this need and have been adding language to encourage additions to the various healthcare curricula to incorporate IPE into the education of doctors, nurses, dentists, and others. The exact manner in which this education will be delivered is not settled but will include a clinical component so that healthcare providers—including physicians—will get directed training in communication, team building, and maximizing resources, especially in the care of patients with chronic conditions.

As noted above, there has been a tremendous amount of technologic change throughout medicine. This has combined with a number of factors, such as increased specialization, limited duty hours for residents, and new waves of knowledge, to create a world where patients increasingly wonder whether physicians see them as people. Has our profession become so distracted by a myriad of new requirements and changes that it has lost its sense of professionalism about patient care and a sense of the code of conduct that has been emblematic of medicine? Medical education has responded by placing new emphasis on professionalism and humanism in all aspects of training for physicians, again, across the continuum.

While medical students have an increased number of learning opportunities directed at professionalism, it is perhaps more noticeable at the graduate medical education (GME) and CME levels. One of the great contributions of the GME competencies, noted above, is the inclusion of professionalism as a core competency and increased efforts to include this aspect of training for all physicians.

The overall challenge of the factors noted above is how to create the technical expertise that patients expect while maintaining strong doctor-patient relationships. One method for addressing the technical piece has been the increased use of simulation as the "see one, do one, teach one" paradigm of past years is replaced by mechanical simulation and computer-based decision-making exercises. The doctor-patient relationship can be directly addressed using standardized patients (SPs). SPs are individuals trained to portray patients presenting with a wide variety of illnesses as well as a wide variety of patient interpersonal styles, allowing doctors at all levels to be trained and examined on their ability to interact, provide counsel, and show appropriate empathy in addition to "getting the right answer" of diagnosis. SPs may also be used to teach "breaking bad news," difficult areas of inquiry such as substance abuse or domestic violence, and cultural differences. While the majority of SP exposure to date has been in medical school, it is safe to assume that the need to measure interpersonal and communication competencies at later stages of training will involve SPs as well.

The final area of "what's new" involves the changes in the knowledge of the sciences underpinning medicine. The media have been quick to pick up on the phrase "personalized medicine," though its actual practice is still evolving. Nonetheless, the vague rumbles of genetic and genomic effects on patient care will shortly become an avalanche of data, probabilistic treatment options, and new risk profiles that will become a standard part of medical practice. The medical student curriculum contains an increasing emphasis on genetic aspects of illness, but a physician's ability to interpret the data, explain findings to patients, and incorporate new knowledge at the rate that it will arrive is only beginning to be factored into education. Similarly, rapid changes in the understanding of the immune system and how it can be manipulated will require physicians' ability to rapidly adapt clinical practices. Once again this will need to be spread over the entire continuum of education as increasing amounts of information will be added after residency training is completed. Looking forward, computer-aided diagnosis may become a welcome and necessary adjunct to physicians' personal knowledge, adding another challenge to maintaining a strong doctor-patient relationship.

Overall, medical education is evolving in parallel to the evolution of our scientific knowledge, technical capabilities, and changes in healthcare delivery. As in our clinical work, using the most up-to-date and evidence-based educational methods will be critical as we move forward as teachers and learners.

David B. Mallot, M.D., is Associate Professor and Associate Dean of Medical Education, Richard Colgan, M.D., is Associate Professor and Director of Medical Student Education, Department of Family and Community Medicine, and Linda Lewin, M.D., is Associate Professor and Education Division Chief, Department of Pediatrics. All are affiliated with the University of Maryland School of Medicine in Baltimore, Maryland.

Responding to a Changing Landscape:
Medical School Curricular Change

Patricia A. Thomas, M.D.

When the faculty of Johns Hopkins University School of Medicine met in 2003 to update the medical school curriculum, they asked two critical questions: first, what would be the product of this new curriculum, i.e., what skills and knowledge would Hopkins medical school graduates need to lead and practice medicine effectively in the 21st century? And second, what do we know about the most efficient and effective learning strategies to achieve these competencies? The discussions concluded in the sobering realization that many aspects of the medical school curriculum needed revolutionary change.

Medical students have shown incredible aptitude to learn facts. There have been lingering concerns, however, that our previous methods did not result in learning that was accessible when students needed it, but rather engendered a "binge and purge" approach to learning, (i.e., memorize for the test and quickly forget). The exponential growth of biomedical information and the individualization of patient care presaged by the completion of the Human Genome Project have only worsened this problem. A new framework for understanding health and disease was needed. The *Genes to Society* paradigm that was implemented in 2009 introduces students to the science underlying health and disease with a systems biology approach, encouraging students to integrate multiple disciplines in their approach to clinical problem solving.[1] The goal of this curriculum then is to establish a foundation of knowledge, but, more importantly, to promote habits of thinking that encourage students to identify knowledge gaps and know how to seek and appraise new information. Since it is rare that one individual has all the relevant knowledge for a particular problem, students are taught collaborative approaches to learning throughout the curriculum.

Other major initiatives in the new curriculum include:

- *Early patient care experiences:* Students have patient contact in the first week of medical school and, after a foundational course in the medical interview and physical exam, start working with a community-based preceptor in January of the first year. Students remain with these preceptors for a full year, attending practice one half-day per week.

- *Inclusion of multidisciplinary content:* In the first two years, students complete courses in health care disparities, health promotion, pain care, substance abuse care, patient safety and quality, disaster medicine, and end-of-life and palliative care; all of these are taught by multidisciplinary teams of faculty and inter-professional providers.

- *Enhanced social science content:* Ethics, cultural competence, population health, and knowledge of healthcare systems had previously been delivered in a standalone course that ran concurrently with the traditional medical school courses. These topics are now woven throughout the curriculum, modeling the application of a systems approach to understanding health and disease.

- *Scholarly projects:* Each student chooses an area of scholarship (clinical research, basic research, medical humanities, public policy, history of medicine) and completes a mentored scholarly project by the end of Year 2.

- *Professionalism:* Each student is assigned a faculty mentor, chosen for his/her teaching and professional qualities. This mentor teaches the student clinical skills in year 1 and advanced communications skills such as counseling and difficult conversations in subsequent courses, and

meets for discussions of critical incidents during the clinical years. The focus is the student's personal development as a medical professional.

- *Attention to transitions:* Additional courses were developed to mark the transition to the hospital-based clerkships at the end of Year 2, the integration into each discipline-specific ward team, and the transition to internship in spring of Year 4.

- *Assessment:* Although the grading system was set as pass-fail, a plan for multiple measures of skills and knowledge, including many simulated encounters as well as written exams to ensure competence, was implemented.

In many ways, the Hopkins renewal process was not unique. Many established U.S. medical schools have undergone in the last decade or are in the process of extensive curricular change, and a number of new schools and extension campuses are being created. Often there are unique features of a curriculum that specifically address the school's mission, such as rural medicine or research requirements. Regardless of its location, however, every medical school has a social contract to meet the healthcare needs of the public its graduates serve.

There has been no dearth of advice to medical schools on curriculum reform in the last decade. A 2010 review[2] of 15 published reports calling for reform of medical education found common themes that relate directly to curricula, including:

- Improved flexibility of training programs, using competency-based milestones and assessments and pedagogy that foster the skills of lifelong learning.

- Need for evaluation and research to better understand the best approaches to learning in medicine, and the outcomes of medical education.

- Emphasis on social accountability and the need to foster professionalism.

- Use of technology in the curriculum that will mirror use in practice, such as management of information resources and electronic medical records.

- Alignment with changes in the healthcare system—embedding cost-effectiveness, quality indicators, and inter-professional models of care into medical student clinical training.

- Future directions in the healthcare workforce. Medical school graduates should reflect the diversity of the population they serve and choose medical specialties that align with the needs of the population.

In the 21st century, these healthcare needs are rapidly evolving, and every school now has an ongoing curriculum renewal process to attend to its relevance. More than ever, schools need partners in this effort, not only in academia, but also in government and industry and with practicing physicians who are literally on the frontlines of the healthcare delivery system. Readers interested in details of individual curricula can refer to the September 2010 supplement to *Academic Medicine*.[3]

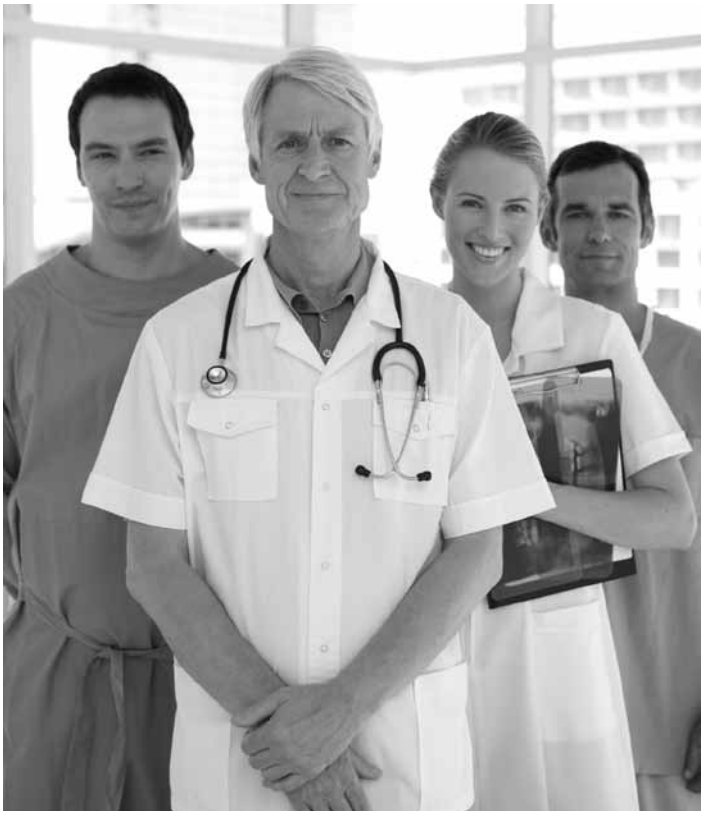
Patricia A. Thomas, M.D., is Professor of Medicine, Vice Chair for Education in the Department of Medicine, and Associate Dean for Curriculum at Johns Hopkins University School of Medicine.

References:

1. Wiener CM, Thomas PA, Goodspeed E, Valle D, Nichols DG. From "Genes to Society"—the logic and process of the new Johns Hopkins School of Medicine Curriculum. *Acad Med.* 2010;85:498-506.

2. Skochelak SE. A decade of reports calling for change in medical education: what do they say? *Acad Med.*2010;85:S26-S33.

3. Issue: Volume 85(9) Supplement, A Snapshot of Medical Student Education in the United States and Canada: Reports from 128 Schools pgs. S1-S706 September 2010.



What is PBL and What is Case-Based Learning and How do They Differ?

Stephen Davis, Ph.D.

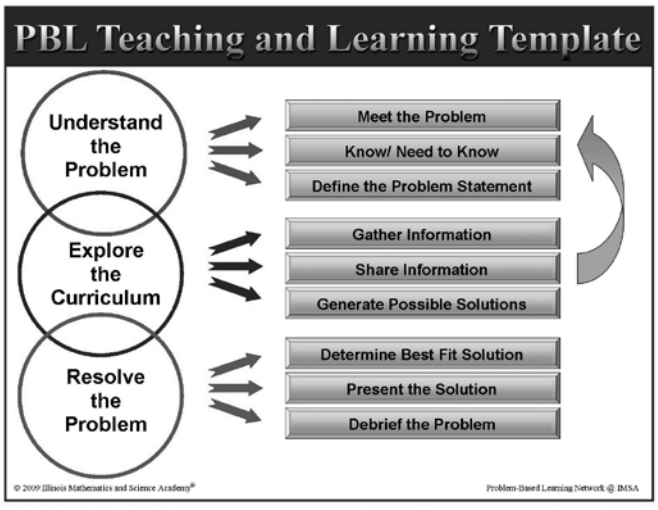
Problem-based learning (PBL) refers to a curriculum design that uses real-life historical problems as a stimulus for medical students' learning.[1] Students encounter the problem before any practice or instruction and are challenged to determine their current knowledge of the problem and decide what else they need to know to understand it. Following the identification of learning needs, students proceed independently to find and study resources and to organize their time in preparation for another cycle of problem encounters and determination of current knowledge and knowledge needs. The cyclic PBL process continues until the students understand the problem and its underlying causes well enough to move on to a new problem.

Teachers in this design are referred to as facilitators or tutors and play a role of non-directive intervention with responsibilities for organization, atmosphere, administration, focus, stimulation, and evaluation. A small group of six to eight students and one or two facilitators serves as the forum for the PBL process. PBL is almost completely devoid of any lecture, and the responsibility for learning is on the student.

At the heart of the curriculum are the problems, called cases. Cases are locally developed, based on real situations, and authored by those who encountered the original problem. Case authors work with a team to develop a problem-based learning module (PBLM) that includes relevant case facts logically ordered over several pages for presentation to the students. The PBLM also provides facilitators with an abstract, suggested learning issues, suggested timing, and forms for case evaluation.

The classic PBL model consists of six steps:

1. The problem is encountered first in the learning sequence, before any preparation or study has occurred;
2. The problem situation is presented to the student in the same way it would be presented in reality;
3. The student works with the problem in a manner that allows his ability to reason and apply knowledge to be challenged and evaluated, in a way appropriate to his level of learning;
4. Needed areas of learning are identified while working with the problem and are used as a guide to individualized study;
5. The skills and knowledge acquired by this study are applied back to the problem, to evaluate the effectiveness of learning and to reinforce learning; and
6. The learning that has occurred in work with the problem and in individualized study is summarized and integrated into the student's existing knowledge and skills.



Howard Barrows developed a taxonomy (Table 1) on the most common types of PBL methods and rates their effectiveness on a

scale of one to five—five being best in relation to the structuring of knowledge, clinical reasoning process, effective self-directed learning skills, and increased motivation for learning.

Table 1: Barrows Taxonomy of PBL Methods

Method	SCC[a]	CRP[b]	SLD[c]	MOT[d]
Lecture-based cases	1	1	0	1
Case-based lectures	2	2	0	2
Case method	3	3	3	4
Modified case-based	4	3	3	5
Problem-based	4	4	4	5
Closed-loop problem-based	5	5	5	5

Notes:
a. Structuring of knowledge (SCC)
b. Clinical reasoning process (CRP)
c. Effective self-directed learning skills (SLD).
d. Increased motivation for learning (MOT)

These different PBL methods can be seen as continua from near total teacher control to near total student control of the learning. Of course, in any method, the skill of the teacher and the evaluations used greatly affect learning outcomes. Barrows says the closed loop or reiterative PBL method, while being the best method to address qualitatively specific educational objectives, is also the most complex, time-intensive, and costly to develop. That is, the methods with the greatest educational potential are also the more difficult and expensive to mount.

In summary, PBL is a curriculum design using problems to engage students in self-directed learning. By encountering problems before any theory or practice, the students must take responsibility for their own learning. While the design and implementation of each PBL curriculum, track, or course is unique, the aspects outlined herein are considered the defining aspects of a problem-based learning curriculum.

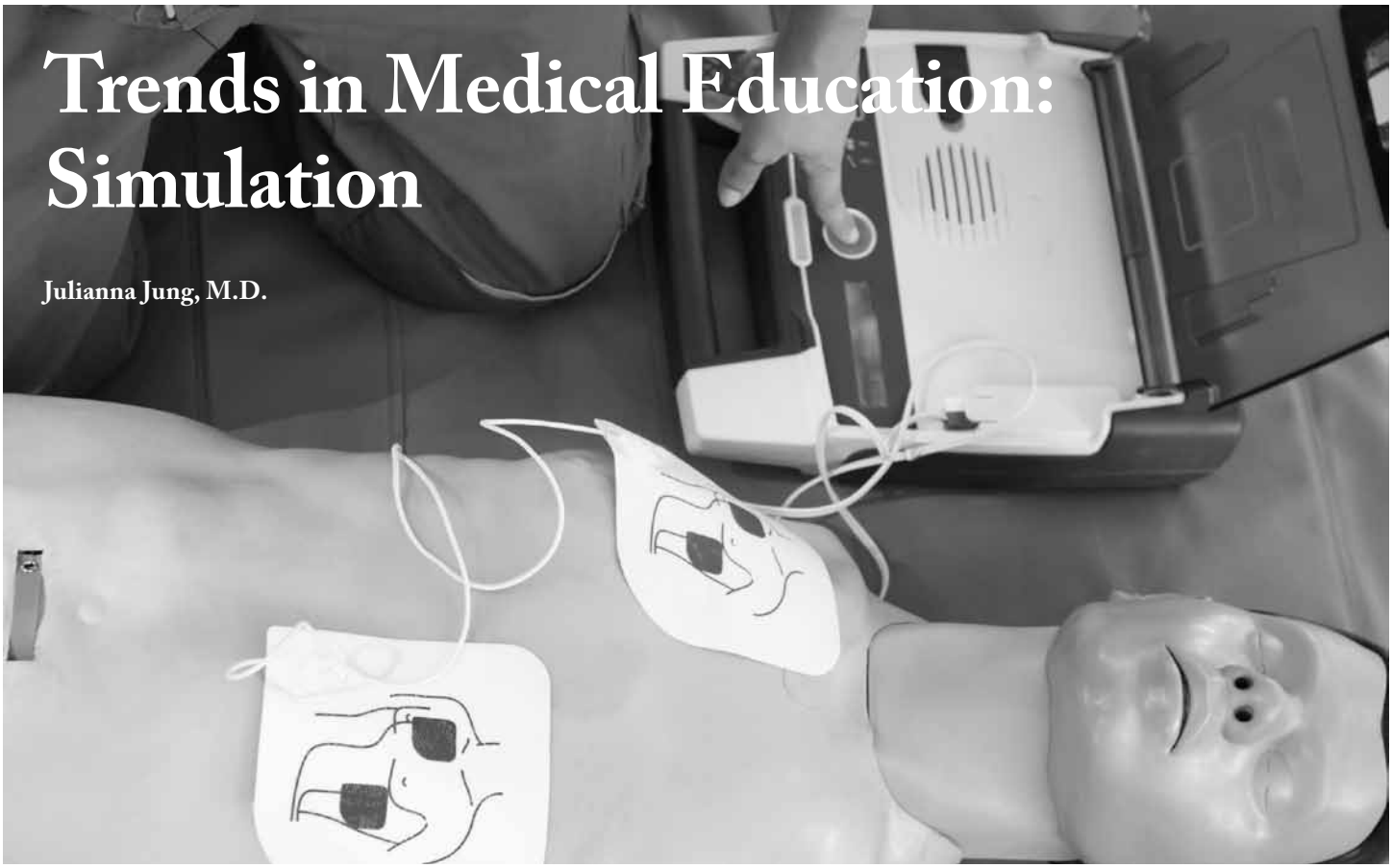
Stephen Davis obtained his Ph.D. in Educational Design and Technology from The Ohio State University, focused on problem-based learning in medical education. He currently serves as the Director of Faculty Development for the Ohio University Heritage College of Osteopathic Medicine.

Reference:

1. Barrows, H. (1986.) A taxonomy of problem-based learning methods. *Medical Education* 20: 481–6.

Trends in Medical Education: Simulation

Julianna Jung, M.D.



Simulation is a rapidly growing component of modern medical education that has been clearly demonstrated to improve learner performance and patient outcomes. It encompasses all learning activities that seek to replicate clinical situations, and includes teaching with manikins, standardized patients, and new computer technologies. Expansion of the field of simulation has been largely motivated by the patient safety movement—simulation is an ideal tool to address many of the root causes of medical error, including lack of experience and preparation, as well as failures of communication.

Simulation is one of the fastest growing trends in medical education, and with good reason: it produces measurable results. Numerous studies have proven the superiority of simulation over traditional methods for helping learners achieve competency in procedural skills, resuscitation protocols, and effective teamwork and communication.[1-5] There is also a growing body of evidence that simulation not only improves learner performance, it actually translates to better patient outcomes.[6,7]

This teaching technique encompasses any learning activity that recreates a clinical situation in a controlled setting. Most simulation conducted in medical schools today uses either manikins or standardized patients—actors who are trained to realistically portray patients with particular conditions or concerns. The success of these forms of simulation has spurred interest in the development of new simulation technologies. Virtual patients are screen-based avatars that allow learners to work through complex cases and "experience" the consequences of the management decisions they make along the way. "Serious gaming" is an emerging industry that applies the technology used in computer games to medical education. And virtual reality is no longer confined to the realm of science fiction—this technology is being used to develop immersive environments that replicate the challenges faced by healthcare workers in natural disasters and on battlefields.

Manikins used in simulation range from the very simple to the incredibly complex. While basic manikins are still used for practicing foundational skills like CPR or phlebotomy, modern high-fidelity simulators are much more sophisticated. They blink, breathe, and talk! They can replicate vital sign and cardiac rhythm abnormalities, as well as physical exam findings like heart and lung sounds, pulses, manual blood pressures, pupillary reactivity, diaphoresis, drooling, and even seizure. They can have a variety of procedures performed on them, and can be programmed to respond physiologically to learner interventions. These simulators are so lifelike that learners sometimes forget that they're not real patients.

No matter how sophisticated simulators have become, however, there is no substitute for human interaction in medical education. Standardized patients (SPs) receive extensive training that enables them to convincingly portray real patients, incorporating their personalities, medical histories, and certain physical exam findings. SPs are able to play the same role again and again, ensuring that all learners are exposed to important clinical problems and communication challenges. They are also trained as expert observers and can supplement faculty in teaching clinical skills, reporting reliably and providing feedback on learners' history-taking, physical examination, or interpersonal skills. Best of all, they give learners the rare opportunity to receive education and feedback from a patient's perspective, thereby engendering respect and compassion.

Simulation has become a standard part of the curriculum in many medical schools, and new roles for simulation are described every day. At Johns Hopkins University School of Medicine, students spend more than 300 hours in simulation during the course

of their curriculum—the approximate equivalent of an eight-week clinical rotation. The National Board of Medical Examiners requires that physicians pass an SP-based clinical skills exam prior to licensure. It is clear that simulation has fundamentally changed the nature of teaching and assessment in medicine. This may prompt readers to wonder about the motivation for this change. Simulation is costly, both financially and in terms of faculty time, and it takes learners away from the bedside. And besides, medical education was just fine for a hundred years without it. Right?

In 1999, the Institute of Medicine issued the seminal report *To Err is Human*, which recognized medical error as a major contributor to morbidity and mortality.[8] This publication heralded the patient safety movement, with its focus on identifying and eradicating potential sources of patient harm throughout the healthcare system. Early work in this field emphasized the role of system factors in patient safety, but it soon became clear that human factors like inexperience, lack of preparation for critical incidents, and failures of teamwork and communication were also significant contributors to error, often with fatal consequences. It became apparent that traditional medical education does not always prepare physicians to contend with the clinical challenges they face in practice, and that patients were the victims of this shortcoming.

Simulation provides the perfect solution to this problem. It affords learners the opportunity to encounter critical situations in the lab before they encounter them on the wards. It lets them make crucial decisions for the first time in a setting where a mistake won't cost a patient's life. It allows them to "practice on plastic," ensuring that their first inevitably clumsy procedures won't be performed on fellow humans. And it allows inter-professional teams to train together, learning the best techniques for mobilization of resources, seamless integration of team members, and effective communication.

In short, simulation has had a revolutionary influence on medical education. It is a field that is rapidly growing, with new technologies continually emerging, and its role in medical education is expanding. It has unquestionably improved the skills of trainees at all levels, in terms of both technical competence and effective communication. Most importantly, there is a small but growing body of evidence that simulation improves patient outcomes. Which, of course, is the ultimate goal of all educators who teach using simulation: safer, healthier patients.

Julianna Jung, M.D., is a faculty member in the Department of Emergency Medicine at the Johns Hopkins University School of Medicine and the Associate Director of the Johns Hopkins Medicine Simulation Center. For a complete list of references please call 301.921.4300 or email sraskin@montgomerymedicine.org.

References:

1. Wayne, et al. (2005.) Simulation-based training of internal medicine residents in advanced cardiac life support protocols: A randomized trial. *Teach Learn Med* 17(3): 210–6.

2. Hunt, et al. (2008.) Simulation of in-hospital pediatric medical emergencies and cardiopulmonary arrests: Highlighting the importance of the first 5 minutes. *Pediatrics* 121(1): e34–43.

3. Barsuk, et al. (2009.) Mastery learning of temporary hemodialysis catheter insertion by nephrology fellows using simulation technology and deliberate practice. *Am J Kidney Dis* 54(1): 70–6.

The Emergence of eHealth

Nancy K. Glaser, M.S., RD, CDE

Physicians are anxious about all the new technology. So are patients.

The Emergence of eHealth and mHealth?

eHealth is a term coined before 1999 to define healthcare systems that are communicated through interactive computer technologies, including electronic health records, information systems, telemedicine, *mHealth* or mobile health, knowledge management (e.g., Internet resources), and other virtual medical care. With continued restraints on physical resources, including limited time to spend with patients, *eHealth* offers patients alternative or supplemental medical interventions and can offer healthcare providers clinical decision support, easing the burden of the increasing time constraints of the healthcare provider.

eHealth offers patients alternative or supplemental medical interventions and can offer healthcare providers clinical decision support, easing the burden of the increasing time constraints of the healthcare provider.

The Robert Wood Johnson Foundation created the Health e-Technologies Initiative in 2002 to advance the emergence of new scientific technologies and the effectiveness of such interactive solutions in health behavior and chronic disease management. *eHealth* has only touched the surface of the possibilities in the healthcare system.[1] Currently, *eHealth* systems offer support for chronic diseases such as diabetes, cardiovascular disease, HIV/AIDS, and asthma, as well as management of conditions such as obesity and smoking cessation.

In a world where there is a limited capacity for the healthcare system to provide a vehicle for consumers to change behaviors and to manage chronic disease, *eHealth* offers the technology to bridge this gap.[2] But along with *eHealth* is a potential barrier: *eHealth* illiteracy: "the ability to seek, find, understand, and appraise health information from electronic sources and apply knowledge gained to addressing or solving a health problem."[3] If patients have access to this system and are able to use it for their benefit, the outcomes can be significant, but for many patients, it can be as much of a barrier if not more of one than health literacy itself.

mHealth is a subcategory of *eHealth*. It is the use of mobile communication devices to support the practice of medicine or public health. Eighty-seven percent of the world's population uses some type of mobile device, so this form of healthcare delivery is critical.[4] *mHealth* improves access to healthcare, healthcare systems, and healthcare information. In rural areas and developing nations, *mHealth* can reduce health disparity by providing critical care to patients who would not otherwise have the ability

to receive any care at all. The mobile device could be a patient's personal cell phone, a professionally trained healthcare provider's mobile device, or a device provided for use by a lay person acting on behalf of a healthcare provider, as is often the case in developing nations. Mobile devices can be linked to other devices such as blood pressure monitors, fetal heart rate monitors, or photographic devices. Communication through these devices—with either software or live healthcare personnel—can save lives.

Examples of eHealth Tools to Help Patients

Appointment reminders: Solutions have been developed to reduce "no show" rates. Patients can set their own reminders or a reminder can be set based on scheduling through an electronic health record. Healthcare providers each lose thousands of dollars a year because of missed appointments. Reducing the rate of "no-show" appointments isn't easy, but it can be done.[5]

Weight loss applications: Many applications are on the market to help patients reduce weight, some free of charge and others with minimal to large costs for usage. Engaging a patient to set goals, make better food choices, and increase physical activity is among the features of weight loss applications. Some feature food tracking so that the user can scan a barcode on a package to enter an item consumed; others offer a pedometer that links to the mobile software, which can make suggestions to the user on increasing calorie expenditure.

Examples of real-time information: Patients and healthcare providers can obtain information on the Internet or from mobile applications. Patients can empower and help themselves by becoming informed users of the healthcare system. A patient who has a skin rash, for example, can access a website or applications that can help him or her describe the condition more accurately when calling a healthcare provider.[6] The challenge is finding sources of accurate, reliable information.

Embracing eHealth can provide for more efficient use of time and resources. Learning more about how to use technology in your practice is essential in today's fast-paced world.

Nancy K. Glaser, M.S., R.D., C.D.E., is a freelance writer, previously with the Joslin Diabetes Center and WellDoc, Inc. For a complete list of references and additional resources, please call 301.921.4300 or email sraskin@montgomerymedicine.org.

References:

1. Health e-Technologies Initiative. (2008.) *Using eHealth intervention to engage consumers – A practical guide*.

2. Ahern, D.K., J.M. Kreslake, and J.M. Phalen. (2006.) What is eHealth (6): Perspectives on the evolution of eHealth research. *J Med Internet Res* 8(1): e4.

3. Norman, C.D., and H.A. Skinner. (2006.) eHealth literacy: Essential skills for consumer health in a networked world. *J Med Internet Res* 8(2): e9.

Understanding the Outcome of Medical Education: Creating a Competent Physician

Robert Dobbin Chow, M.D., M.B.A., and Tyler Cymet, D.O.

What is taught in today's medical schools and what is learned can be frustratingly disparate. Prior to 1999, the quality of the medical school educational experience was based on an evaluation of the learners' attitudes and skills.[1] Skill was measured based on the number of patients seen with a certain condition or the number of medical procedures performed by the trainee. The assumption was that if the volume of clinical exposure reached a pre-defined threshold, a satisfactory skillset was obtained and a positive learning outcome achieved. If a student performed a procedure often enough, he or she would eventually develop proficiency in that procedure. In evaluating clinical competency, however, *quantifying the processes* experienced by students is not as effective as *measuring the competencies* of the students at the end of the educational experience. The ultimate goal in medical education is to ensure that medical students and residents achieve and surpass a pre-determined level of overall competency. This has always been easier to quantify in the domain of medical knowledge because of the ability to utilize standardized tests. Measurement of competency in the domains of skills and attitudes, however, has proven to be much more elusive.

To meet the overall objective of enabling trainees to practice medicine independently and to learn the art and science of medicine in an environment safe for patients and trainees, a new paradigm was needed. In 1999, the Accreditation Council for Graduate Medical Education (ACGME) and the American Board of Medical Specialties (ABMS) promulgated the six general competencies.[2] The decision to designate these competencies as core and essential was based on an extensive literature review, with input from educators, residents, and program directors. One of these competencies remains medical knowledge. The other five comprise the remaining component attributes that, together, describe an overall competent physician. These competencies are independent of each other, are equal in standing and validity, and welcome evaluation methodology. Here is the list of the six core competencies, and their descriptions and their definitions.

To meet the overall objective of enabling trainees to practice medicine independently and to learn the art and science of medicine in an environment safe for patients and trainees, a new paradigm was needed.

The Six Core Competencies and Definitions

Patient Care

Provide care that is compassionate, appropriate, and effective treatment for health problems and to promote health. Does the clinician have the requisite judgment and skills to effectively manage the patient? This competency encompasses procedural skills, decision-making at the bedside, and the application of medical knowledge. In short, this competency can be called "doctoring."

Medical Knowledge

Demonstrate knowledge about established and evolving biomedical, clinical, and cognate sciences and their application

in patient care. This is the only competency that can be measured in the absence of patients or other healthcare providers.

Interpersonal and Communication Skills

Demonstrate skills that result in effective information exchange and teaming with patients, their families, and professional associates (e.g. foster a therapeutic relationship that is ethically sound, use effective listening skills with nonverbal and verbal communication, work as a team member and at times as a leader). This competency defines communication broadly. It encompasses effective communication with patients, their families, other physicians, and other members of the healthcare team. Communication involves a variety of media, including the written medical record, the electronic medical record, language, and dissemination of medical knowledge.

Professionalism

Demonstrate commitment to carrying out professional responsibilities, adhering to ethical principles, and maintaining sensitivity to diverse patient populations. This competency encompasses both behaviors and attitudes. It is difficult to define professionalism and it has proven challenging for trainees to achieve. In short, professionalism is how the clinician behaves when no one is observing or monitoring.

Systems-Based Practice

Demonstrate awareness of and responsibility to larger context and systems of healthcare. Be able to call on system resources to provide optimal care (e.g., coordinate care across sites or serve as the primary case manager when care involves multiple specialties, professions, or sites).

Practice-Based Learning and Improvement

Able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their practice of medicine. How effectively does a clinician work within a system of care? Does the clinician look to improve that system and be a valuable member of the care team? A system can be team of physicians, an interdisciplinary care team, or an inpatient nursing unit. A clinician can be a member of several teams simultaneously.

Valid, reliable assessment tools are integral to the implementation of the new competencies. Curriculum is no longer a body of knowledge, but a pre-determined set of learning experiences and an assessment strategy. The previous approach was to wait until the end of a rotation and ask the assigned preceptor to rate a student's performance. The responsibility now resides with the students/residents to perform self-assessment throughout the rotation. They must document what they have learned and how they have progressively performed on a particular skill. This approach to education devalues counting the number of times a procedure has been performed and has led to the next logical step in medical education—the creation of milestones. Perhaps there is nothing unique about spending one month in one specialty area or even one year at a level of residency training. Trainees with a higher skill level or more extensive background should be allowed to complete rotation or training requirements in less than the standard time periods. Students should reach pre-designated milestones in each of the six core competencies as they traverse the path to completion of their training requirements.

Evaluating competencies has nurtured the science of measuring outcomes of the educational experience. The competency movement has also begun to influence the physician credentialing and privileging process. Once medical educators defined the core educational competencies for residency training, institutions adopted those skills as essential for a competent practicing physician. The six core competencies have become the evaluative platform and the new vocabulary for credentialing.[3] Thus, for practicing physicians who trained prior to 1999, there will be a need to acknowledge the core competencies, embrace the outcomes approach to medical education, and reaffirm their own competencies within this new framework.

Robert Dobbin Chow, M.D., is Program Director and Vice Chairman, Department of Medicine, Good Samaritan Hospital in Baltimore, Maryland, and Governor of the American College of Physicians of Maryland. Tyler Cymet, D.O., is Associate Vice President for Medical Education for the American Association of Colleges of Osteopathic Medicine.

References:

1. Recommended curriculum guidelines for family medicine residents. AAFP Reprint No. 284, available at http://www.aafp.org/online/etc/medialib/aafp_org/documents/about/rap/curriculum/patiented.Par.0001.File.tmp/Reprint284.pdf, accessed on February 16, 2012.

2. Swing, S.R. (2007.) The ACGME Outcome Project: Retrospective and prospective. Medical Teacher 29: 648–54.

3. American Board of Medical Specialties, available at http://www.abms.org/maintenance_of_certification/MOC_competencies.aspx, accessed on February 18, 2012.

The Informationist's Role in 21st Century Medicine

Margaret Gross, M.A., MLIS, AHIP and Victoria H. Goode, MLIS

The changing landscape of the medical world impacts everything from how physicians treat disease to how researchers access information. Our human genome era offers the potential to revolutionize healthcare through personalized medicine. Genomics-based medicine and other fields that study protein isoforms encoded by the human genome will affect medicine in the near future through efficient diagnosis and more effective, targeted treatments.[1] Diseases can be mitigated with specified treatments targeted to the individual, and the researchers in these fields need information support that focuses on these personalized needs. As we are well aware, our post-Google environment offers researchers, medical professionals, and patients vast quantities of information—freely available on personal computers, iPads, and smart-phones. User-friendly Internet search engines have transformed information access and created alternatives to visiting a physical library.

So how does a library serve the needs of these researchers? The Welch Medical Library on the Johns Hopkins University Medical Campus has responded to these changes by adjusting resources and services. In response to a 2010 Welch Library survey, patrons indicate frequent use of the library website; 73 percent use it daily or weekly. Survey respondents also reported an increased use of other information gateways such as Google: 91 percent use such search engines daily or weekly.[2] Foot traffic, however, has decreased over the past decade; 62 percent of users indicated that they used resources on library premises quarterly or never.[2] On average, slightly more than 100 people enter the library daily whereas about 35,000 articles are downloaded from databases that users access remotely via the library website.[3] Clearly, library patrons' information-seeking behaviors, attitudes, and needs have changed.

Welch Library and the informationist service model it supports face the bleeding edge of change, resisted by some and embraced by others. The library has chosen to focus more on value-added services for the information consumer in customized ways that are more useful to individuals, research teams, and labs. In 2002, Welch Library created a team of librarians called informationists. In a journal editorial a decade ago, Davidoff and Florance first proposed the "informationist" concept as a new role for medical librarians that combined subject-specific domain expertise with the expert searching skills of an information professional.[4] Today, library informationist services are offered at the National Institutes of Health (NIH) and Vanderbilt University, as well as Johns Hopkins University.

Unlike the librarian from our childhood memories—who gave us our first library card, checked out books, and took our overdue fines—informationist librarians in an academic setting serve the research and information needs of assigned clinical, public health, and basic science departments. For example, the first author works several days in an office in the microbiology department for deeper collaboration and interaction with faculty and students. Her office, across the hall from the microbiology and biochemistry research labs, is perfectly situated for spontaneous conversations and reference questions. By interacting directly in their work flows and within their teams and committees, Welch informationists provide services based on an evolving understanding of how scientists and clinicians use information. Informationists are encouraged to take graduate classes that deepen their subject knowledge related to the departments they serve. In fact, the second author's commitment to lifelong learning inspired her to take courses in how to conduct clinical research. Concentrating on how the medical and scientific professions use information and manage data means less time and money spent on maintenance of the physical building housing some of that information. This paradigm shift facing the library profession has been a welcome change for Welch informationists, who now interact in a broad array of knowledge management activities beyond library walls.

The exponential increase of information and technology in the last several years has inspired hospital librarians likewise to rethink their traditional roles. Research reveals that two clinical questions arise for every three patients in office practice.[5] During patient encounters in an academic setting, five questions arise for every patient seen. However, physicians pursue answers to only 36–55 percent of those questions pertaining to patient care.[6] Thus, when an average of 95,600 patients visit hospitals each day, physicians average five questions per patient encounter in academic settings, and only 55 percent of those questions are answered, more than 215,000 questions remain unanswered per day.[7] Unfortunately, clinicians have little time to find immediate answers to their care questions. As a response, in many hospitals, librarians participate in patient rounds or morning report. At hospitals such as NIH, informationists take laptops to clinical floors and are available literally at the bedside to research immediate answers to clinical questions. NIH informationist assessments reveal that groups that include an informationist not only use a wider array services and e-resources but are also "more likely to pursue answers to questions that arise in their work than they were previously."[8] In today's healthcare budget crisis, medical librarians' expert information-searching and retrieval skills enhance job satisfaction for the time-constrained clinician or researcher. Such skills play a vital role in increasing profitability by minimizing the amount of time and money healthcare professionals spend searching for relevant diagnostic or treatment information.

Peggy Gross, M.A., MLIS, AHIP, is a public health informationist in the departments of biochemistry, microbiology, international health, molecular microbiology, and immunology, and Victoria Goode, MLIS, is a clinical informationist in the departments of neurosciences, internal medicine, and rheumatology and the Kennedy Kreiger Institute. Both are at Johns Hopkins University School of Medicine in Baltimore, Maryland.

References:

1. http://www.genome.gov/13514107
2. Internal report of JHU LibQual Survey, April 2010
3. Internal report, Welch Library, February 2011.

Virtual Clinical Experience in Medical Education

Cole A. Zanetti, D.O., Owen D. Vincent, D.O., and Matthew Stull, M.D.

Rapid change in healthcare delivery and clinical competency is an ongoing dilemma in providing cutting-edge medical training for medical students and residents. Medical schools' inability to keep up with the rapid changes can have a crippling impact on our ability to consistently provide best practice methods of care for our patients. Fortunately, recent research and technologic advances have enabled a transcendent step using virtual experiences to help train future physicians. Building an immersive learning experience through a virtual interface has proven to provide adaptable, realistic training experiences. These programs yield gaming-style engagement, providing a powerful, supplement training tool in medical education. As medical education continues to face hurdles of modernity in its execution and consistency, the present healthcare renaissance necessitates innovative solutions to ongoing and future challenges. One such innovation is the virtual clinical experience.

Virtual experiences for complex, interactive scenarios are a burgeoning toolset already proven effective in training American astronauts, pilots, and soldiers, with great versatility in its application for the current and future training of medical students and physicians.

Virtual experiences for complex, interactive scenarios are a burgeoning toolset already proven effective in training American astronauts, pilots, and soldiers, with great versatility in its application for the current and future training of medical students and physicians.[1,2,3] Research on virtual clinical experience as a learning tool in medical education has been steadily increasing. One article evaluating virtual applications discusses learning through immersive, virtual experiences, in which the learner progresses from basic knowledge acquisition to practical engagement within a realistic context.[4] The article also suggests that interaction within virtual worlds and games is extensive—more than two-thirds of Americans play such games. In this gaming populace majority, entertainment experiences are extrapolated to education and fitness alike.[4] The widespread use of virtual gaming has prompted breakthrough applications in medical education. In a recent systematic review evaluating the utility of virtual patients in medical education, research has shown it to be an appropriate and effective strategy for clinical training.[5] This research review also demonstrated educational utility in setting up a virtual training commons where multiple medical education institutions could utilize the same resources with collaborative cost savings.[5]

In 2004, the Center for Virtual Medical Education (CVME) at Texas A&M University-Corpus Cristi developed an innovative program called Pulse!!, a virtual clinical training and gaming tool for medical and nursing students. Pulse!! utilizes game-play elements to help students develop skills in clinical reasoning, time management, and quick thinking under critical care situations. Pulse!! creator and CVME director Dr. Claudia McDonald noted recently that all research has shown consistent evidence to support Pulse!!'s validity as a reliable, clinical teaching tool for real-world experiences. Publications are pending, but a Pulse!! pilot scene is available on YouTube.com to give potential users greater insight into its utility for training.[6]

The concept of virtual training experiences as a vital aspect of medical education has emerged through the development of a consortium called MedBiquitous, an organization developed to create innovative web-based technologies and healthcare.

"Virtual patients will transform the way we teach medical and health professions students and practicing clinicians," noted Dr. Peter Green, M.D., the Executive Director of MedBiquitous and Chief Medical Information Officer of Johns Hopkins Medicine. Although this may seem like a distant projection, it has already become practice at Imperial College London (ICL), where virtual training is part of the curriculum and students have unlimited training access online. ICL has already created a virtual, immersive experience program imbedded in the software Second Life (SL). SL is *a* free, 3-D virtual world where users can interact and communicate through free-voice and text-chat. Virtual clinical training in healthcare education has been described by SL as, "… a hospital where students can perform such tasks as seeing patients, ordering x-rays, consulting with colleagues, and making diagnoses; students can access the hospital 24 hours a day and practice diagnosing pre-programmed patients."[7]

In 2010, ICL studied a virtual training experience for continuing medical education (CME) credit. One study on virtual training for diabetes mellitus type-2 management in general practice or primary care concluded that virtual worlds offer potential for a new medical pedagogy that can affect not only medical schools but residencies as well.[8] All providers involved in the study rated the virtual reality training experience as an effective means of medical education and stated that they would recommend the training course to their colleagues. ICL presented its virtual clinical training program at the 2009 MedBiquitous annual conference, claiming that it addresses public engagement, patient safety and information, knowledge sharing, professional education, design innovation, and future service delivery.[9] Additionally, Boston University School of Medicine developed a CME tool in SL to train physicians in motivational interviewing skills for colorectal cancer screening. The ICL study found that the program improved provider confidence and clinical practice patterns and concluded that SL is an effective medical education tool.[10]

Medical education has begun a transformation in its training methods, capitalizing on virtual clinical training experiences as a supplement toolset. These recent studies have shown virtual clinical training to be an effective teaching and learning modality for medical students and residents, as well as for post-graduate and continuing medical education. Virtual training is the cutting-edge of clinical curriculum redesign and will have a prominent place in the future and continuum of medical education for years to come.

Cole A. Zanetti, D.O., and Owen D. Vincent, D.O., are in family practice in Concord, New Hampshire, and teach in the Dartmouth College School of Medicine, and in the Family Medicine Residency Program at Concord Hospital. Matthew Stull, M.D., teaches in the University of Cincinnati Emergency Medicine Residency at UC Health University Hospital in Cincinnati, Ohio. For a complete list of references call 301.921.4300 or email sraskin@montgomerymedicine.org.

References:

1. Morie, J.F., G. Verhulsdonck, R.M. Lauria, and K.E. Keeton. (2011.) Operational assessment recommendations: Current potential and advanced research directions for virtual worlds as long-duration space flight countermeasures. NASA/TP-2011-216164.

2. Burnett, R. (2011.) The Army's first virtual training for ground troops: Army developing first "virtual" infantry soldier training system in Orlando." *Orlando Sentinel*. URL: http://articles.orlandosentinel.com/2011-06-09/business/os-video-training-mission-20110609_1_virtual-reality-training-gaming-technology-simulator.

3. Baumann, J. Military applications of virtual reality. Dissertation. Human Interface Technology Laboratory. University of Washington Libraries. URL: http://www.hitl.washington.edu/scivw/EVE/II.G.Military.html.

The Globalization of Medical Education: Sending American Medical Students Overseas

Kelli Glaser, D.O.

The popularity of global health education experiences has grown over the years. Therefore, there is a significant need for quality curricula and planning to address the needs of today's students. Quality curricula in this area and preparation of students for them can be enhanced by considering the guidelines and best practices established by the Working Group on Ethics Guidelines for Global Health Training (WEIGHT). Revision of existing curricula can be made if we strive to collect more information on the impact of these experiences on students in the long run to see if the potential benefits to students and the underserved populations are being realized.

Participating in global health experiences provides many benefits to the participants by enhancing their knowledge, skills, and attitudes relating to the treatment of patients that can be applied to both patients abroad and the patients in their own communities when they return stateside.

Participating in global health experiences provides many benefits to the participants by enhancing their knowledge, skills, and attitudes relating to the treatment of patients that can be applied to both patients abroad and the patients in their own communities when they return stateside. The first benefit is enhanced educational knowledge in the areas of public health, cross-cultural issues including differing concepts of wellness and disease, alternative methods of treatment, and barriers to care delivery. The second benefit is a growth in various skills, including physical examination, simple laboratory testing and use of microscopy, problem solving, and, last but not least, foreign language skills. Finally, these experiences benefit the participant by encouraging an attitude of idealism and service, particularly with underserved populations.[2,3,4]

In one report, 38 percent of students graduating from U.S. and Canadian medical schools participated in at least one international health experience during their undergraduate medical education in 2000.[4] This is a significant increase since 1984 when a previous report estimated that just 6 percent of graduates had these experiences.[2] Currently, just under half of osteopathic medical schools offer some type of formal global health curriculum while a majority have student clubs that engage in global health activities.[5] These experiences range from lectures, specific curricula for international rotations, honors tracks, and M.P.H. degrees in international health, to non-credit volunteer medical outreach trips coordinated by students and faculty that are frequently associated with nonprofit global outreach organizations. The Association of American Medical Colleges' annual Medical School Graduation Questionnaire in 2011 revealed that 38.1 percent of the graduating students felt that they had inadequate education in the area of global health. In comparison, the students felt that they had an adequate education in the areas of diagnosis, disease management, and patient interviewing skills, only 10 percent of the responding students felt that this area of their education was inadequate.[6] With so many students wishing to engage in global health experiences either with or without institutional support, it is important for schools to find ways to educate them so that they are prepared and able to present themselves as international ambassadors in an appropriate way.

Medical educational programs should review the guidelines established by WEIGHT that outline best practices for institutions, trainees, and financial sponsors of global health training experiences.[1] These guidelines address the need for structured programs between the volunteering organization and the local partners. There are two goals that must be kept in mind: 1) mutual and reciprocal benefit, and 2) long-term partnerships. Long-term partnerships are valuable

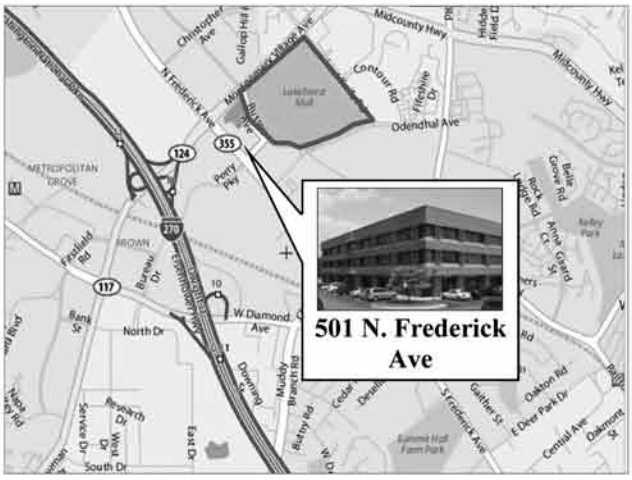
continued on page 34

FULLY BUILT OUT MEDICAL SPACE
FIRST TIME ON THE MARKET!

501 N. FREDERICK AVENUE, GAITHERSBURG

PROPERTY DETAILS:

Rental Rate: $24.50 psf, *net of cleaning* **Suite Size:** 1,281 - 35,000 SF



FEATURES:

- Fully built out medical suites
- Locally owned and managed
- Proximity to local hospitals:
  - **Holy Cross** (*Germantown*): 4 miles
  - **Shady Grove Adventist**: 6 miles
  - **Montgomery General**: 8 miles
- On-Site deli
- Easy access to I-270

** Free rent based on lease term and tenant credit*

FOR ADDITIONAL INFORMATION, PLEASE CONTACT:

NATE CROWE | 301.337.4730
NCROWE@SCHEERPARTNERS.COM

JAMIE RASH | 301.337.4714
JRASH@SCHEERPARTNERS.COM

Scheer Partners
A Reputation for Results

9713 Key West Avenue • Suite 250 • Rockville MD 20850 • T: 301-337-4700

Medical Students Learn from Afar

Lisa Chun, M.D.

In 2012, one can attend medical school without physically sitting in the traditional classroom. Medical education has changed in many ways because technology has made this possible.

With the rapidly expanding knowledge base of data and material, there is a need to learn, sort, integrate, and utilize material at an increasing pace and at a higher volume. Language and communication between generations has always been challenging, now even more so. We know more about how people learn than ever before. It is now more widely acknowledged that people learn differently—they use different senses, there are different rates of acquisition and integration, and people have different interests and activity levels.

Learners are expected to be more engaged in their learning—it is no longer the "sage on the stage" approach. Case studies and small group discussions are commonplace. Pictures, videos, and radiographs have taken on a different role as more people are given an earlier entrée into clinical applications. Games are used to stimulate recall and associations.

So how has the medical education community adapted? A number of very powerful activities have developed and are becoming an integral part of medical education. These include video and teleconferencing, podcasts, streaming video, online testing, email and blogging, and online and distance learning. The flexibility of online education is appealing to educators. Some use the resources found online to augment the classroom in a web-enhanced instructional delivery model. Some people prefer blended classes where instruction is given both face-to-face and online. For undergraduate students, PowerPoint presentations are still the mainstay; today, the presenter is often video- and/or audio-taped and the lecture archived for later reference. Learners are expected to be more engaged in their learning—it is no longer the "sage on the stage" approach. Case studies and small group discussions are commonplace. Pictures, videos, and radiographs have taken on a different role as more people are given an earlier entrée into clinical applications. Games are used to stimulate recall and associations.

In the online portions, asynchronous timelines of courses with particular attention to material deadlines allow for distance learning and for the students to learn at their own pace. There are deadlines to be met, and discussions with classmates are part of the learning experience; online chat rooms allow students to participate in supervised and graded discussion. It is acknowledged that each participant brings something of value to the table and they are encouraged to share and collaborate. Logging into the school computer system tracks the student's use of the material. Reading assignments are given before class and are preparatory for an interactive "classroom." Frequently there are online projects where students are required to apply the principles and course material taught to enhance integration.

Weekly podcasts from the *The New England Journal of Medicine*, *JAMA,* and various specialty organizations exist. Subscriptions to prominent medical journals are now available online. Databases such as the National Library of Medicine are readily available to the public online. There are specialty and subspecialty interest discussion boards.

Conferences are streamed—televised live over the Internet. These are generally interactive. A participant in India may pose a question to a presenter in Washington while another from Florida adds to the conversation.

continued on page 34

The Globalization of Medical Education...

continued from page 31

because they can help mitigate adverse consequences of short-term experiences such as the lack of follow-up care and improper donation of supplies and materials.[7] Working Groups on Ethics Guidelines for Global Health Training (WEIGHT) suggests that in the selection of suitable trainees for these experiences, it is important to identify key characteristics such as professionalism, adaptability, motivation to learn, sensitivity to local priorities and global health issues, and abilities and experience that match the expectations of the position. In addition, it is important to have adequate preparation, mentorship, and supervision for trainees before and during the experiences. This preparation must include measures to ensure trainee safety—not only healthcare preparation (such as the proper vaccines and prophylactic medications), but also travel and on-site safety hazards that might occur due to the trainees' lack of familiarity with their surroundings. Each year there are volunteers and students around the globe who end up in dangerous situations that could have been prevented. Finally, the WEIGHT guidelines address characteristics of programs that merit support by sponsors and the importance of a comprehensive accounting for costs associated with these programs.[1]

Improving global health experiences will require the establishment of reliable methods to solicit feedback from the trainees both during the experience and afterward. Some common methods of doing this are exit interviews, focus groups, surveys, or other means of curriculum evaluation. To better assess the future impact of global health experiences on students, we need to track the participants' future training, practice type, and professional involvement in global health and other activities.

Summary

The benefits of global health experiences on our students are vast and can be enhanced by our development of structured curricula and feedback systems that will maximize the benefits to students and to the populations they treat now and in the future.

Kelli Glaser, D.O., is an adjunct faculty member at Rocky Vista University and Secretary of DOCARE Intl. For a complete list of references please call 301.921.4300 or email sraskin@montgomerymedicine.org.

References:

1. http://whqlibdoc.who.int/publications/2011/9789241501989_eng.pdf

2. http://whqlibdoc.who.int/publications/2011/9789241501989_eng.pdf

3. Crump, John A., et al. (2010.) Global health training: Ethics and best practice guidelines for training experiences in global health. *Am. J. Trop. Med. Hyg.* 83(6): 1178–82.

Medical Students Learn from Afar...

continued from page 33

Computer applications and e-books have changed not only content but also the way information is delivered. These are extremely different tools than those used even five years ago. For instance, cadaver dissection has been the mainstay of medical anatomy for centuries. Now there are computer programs that attempt to show images in 3-D and allow the student/faculty to rotate the body part to view it from a different angle; add or subtract layers of muscle, veins, arteries, nerves, lymphatics, bones, and organs; or do so singularly. Endoscopic procedures are videoed or "televised" live within a closed institution and introduced earlier in a medical student's training. This "closed institution" may be in one geographic location or may be spread out over several states. Heart sounds, for example, can be taught using an electronic stethoscope so that the students and facilitator can hear the same sound even if they are not physically in the same room. Programs are integrated so that the heart sounds can be heard and seen in relation to the associated EKG.

Challenges of internet and computer access and capabilities exist. More attendings, fellows, residents, and students are using electronic medical records and devices during the actual practice of medical care. Team-based learning and patient care have come to the fore. Courses on communication, cultural considerations, electronic medical management and information, and even human relationships exist. But, during the course of this technologic explosion, the patient as an individual and as a person who is part of a family and community can be easily lost.

Too much information? Just the right amount to help make student learning and patient-focused care more effective? Whether technology is a better way to train doctors, or the way to train different doctors, only time will tell.

Lisa Chun,D.O., practices psychiatry in Rockville, Maryland.

References:

1. Doyle, Terry. (2008) Helping Students Learn in a Learner-Centered Environment. Sterling, Virginia: Stylus Publishing, LLC.

2. Cooke, Molly, David M. Irby, and Bridget C. O'Brien. (2010) Educating Physicians A Call for Reform of Medical School and Residency. San Francisco, CA: Jossey-Bass.

Lifelong Learning in Medicine:
Physicians Following Plato's Counsel

Ambadas Pathak, M.D., Steven F. Crawford, M.D., and Frank C. Berry, CCMEP

When Sir William Osler, M.D., addressed the 99th Annual Meeting of the Medical and Chirurgical Faculty (MedChi, the Maryland State Medical Society), he affirmed the great importance of continuing medical education by stating, "The promotion and dissemination of medical knowledge throughout the state remains our important function." Dr. Osler went on to say, "More clearly than any other, the physician should illustrate the truth of Plato's saying, that education is a lifelong process." It is believed by many that this statement gave birth to the concept of lifelong learning for physicians. Lifelong learning is continuing medical education or CME.

Medicine has gone from the development of formal medical education, the establishment of medical colleges and universities, to innovative post-graduate study courses led by university-based medical educators in the 1930s. An explosion of knowledge in medical sciences and technology from the late 1940s to the turn of the 21st century led to an increase in the need for medical specialization, and the creation of specialty and subspecialty societies. These groups developed conditions and requirements for achieving and maintaining specialty certifications. At the same time, increasing focus by legislative bodies created licensing boards with mandatory requirements of CME. There was a growing concern regarding how physicians could most appropriately keep their skills and knowledge up-to-date in light of new advances and treatment modalities and the ever-increasing advancements of technology. Pressures on the profession led to a recognition that it was critical to ensure that CME was effective, high quality, and relevant.

Since its founding in 1847, the American Medical Association (AMA) has demonstrated a commitment to medical education. The Committee on Medical Education, along with the Committee on Ethics, formed the first two committees of the AMA.

The AMA initially concentrated on the development of undergraduate and graduate medical education. Then, in the 1940s and 1950s, the focus increasingly shifted to post-graduate medical education (PGME). In 1955, the AMA surveyed practicing physicians to determine how many participated in PGME. The results of the survey revealed an astonishing one-third reporting no participation in formal PGME in the past five years. The AMA's Council on Medical Education declared that PGME (later changed to continuing medical education by the AMA House of Delegates) lacked direction. The AMA took a number of actions in the 1960s to address these issues, culminating in 1968 with the AMA House of Delegates' establishment of the Physician's Recognition Award (PRA). The PRA is designed to encourage physicians to participate in CME and to provide a standardized means to recognize physicians who voluntarily participate in and complete CME programs. The AMA PRA program established a definition of CME and requirements for the awarding of PRA credits. The AMA administered this program through its Committee for Accreditation and the Liaison Council for Continuing Medical Education or LCCME. The LCCME served as the national accreditor for organizations and institutions that wished to develop CME for physicians. During that period, the scope of activities offered under CME expanded rapidly.

In 1981, the AMA recognized that the enterprise of CME was expanding at a rate that the AMA alone could not adequately administer. To address this, the organization brought together six other organizations—the American Board of Medical Specialties, American Hospital Association, Association for Hospital Education, Council of Medical Specialty Societies, Federation of State Medical Boards of the U.S., Inc., and Association of American Medical Colleges—to form the Accreditation Council for Continuing Medical Education (ACCME).

The charge to the ACCME was to "promote, develop, and encourage the development of principles, policies, and standards for continuing medical education."

To fulfill this charge, the ACCME developed Essential Areas, Elements, and Policies for the accreditation of organizations to develop activities for CME credit. The AMA retained the AMA PRA credit system and the requirements developed for it. In this way, the ACCME governs the processes of accreditation for CME activities and organizations, and the AMA governs the application of credit for CME activities.

It quickly became apparent that two other issues needed to be addressed in regard to CME. First, there were many smaller organizations for which national accreditation did not seem practical, but these organizations had an important role in providing CME opportunities to physicians. To address this, the ACCME created a system to recognize state and territory medical societies. The ACCME developed standards "by which state medical societies will accredit local institutions and organizations and be responsible for assuring compliance with these standards." Through this system, state medical societies act as regional accreditors, within their states. This system is equivalent to the national system of accreditation, applying the same *requirements and processes, to achieve the same outcomes*.

Second, it became apparent that there was a need to establish a system of standards to ensure independence in CME activities. A growing number of activities were receiving funding support from commercial interests, and those interests, at times, appeared to exercise influence over the content of the activities. To address this, the ACCME established the Standards for Commercial Support. There are six standards with sub-sections that are designed to address bias and ensure independence and transparency in the development and content of CME.

Since its establishment in 1981, the ACCME has updated and refined the requirements for accreditation and the Standards for Commercial Support. In 2006, the ACCME introduced an updated set of criteria that are grounded in the fundamentals of adult learning principles and designed to support improvements in quality of care, competence and performance, and patient safety. The criteria mirror the concept of a Plan, Do, Study, Act model, similar to the ones used in performance and quality improvement. They are designed to support a physician's lifelong learning process and to position CME to meet the requirements currently being established for Maintenance of Certification by the American Board of Medical Specialties and Licensure by the Federation of State Medical Boards of the U.S., Inc.

There are 15 core criteria that every accredited CME provider must demonstrate compliance with. These are divided into three Essential Areas and within these are specific sets of Criteria. The Essential Areas and Criteria are:

- *Purpose and Mission, Criterion 1.*
- *Educational Planning, Criteria 2–10, within this area the ACCME has incorporated the Standards for Commercial Support under Criteria 7–10.*
- *Evaluation and Improvement, Criteria 11–15.*

All accredited CME providers must demonstrate compliance with these three Essential Areas and their respective criteria in order to receive Standard Accreditation by the ACCME. A provider can also demonstrate compliance with an additional seven criteria, Criteria 16–22, to achieve Accreditation with Commendation, or Level 3 Accreditation, the highest level of accreditation possible. On average, only 12 percent of providers achieve this higher level of accreditation nationally.

These criteria and requirements allow CME to address and acknowledge the changes in the manner that physicians participate in lifelong learning. Rapid advances in technology have created new platforms that allow for asynchronous learning that focuses on learner-driven needs and peer-to-peer interactions. While traditional formats like didactic lectures and rounds still function as sources of learning, individualized learning in the form of Performance Improvement CME and Point of Care CME allow the physician to focus on individual learning needs, address gaps in practice, and measure improvements in competence, performance, and patient outcomes.

Since its formation as the Medical and Chirurgical Faculty in 1799, MedChi has had a strong commitment to medical education. This is reflected in the rich history of the MedChi Medical Library and the fact that MedChi was among the first societies to become accredited by the LCCME and the ACCME and was one of the first medical societies to be recognized by the ACCME in 1985.

Today, MedChi is a nationally accredited provider, with Level 3 Accreditation (Accreditation with Commendation), and a Recognized State Medical Society Accreditor. As a Level 3 Accredited Provider, MedChi, under the peer direction of the Committee on Scientific Activities, accredits activities directly or jointly, statewide and nationally. As a Recognized State Accreditor, MedChi, under the peer direction of the Continuing Medical Education Review Committee, provides an accreditation system, known as the MedChi Accredited Provider System or MAP System, for 50 providers in Maryland and the District of Columbia. Information about MedChi's CME activities and the MAP System is available on the MedChi website under the Continuing Medical Education tab.

MedChi remains true to the principles of the Society's founders, and to the vision of Dr. Osler, that continuing medical education be a process of lifelong learning. As Dr. Osler so eloquently put it, "The hardest conviction to get into the mind of a beginner is that the education upon which he is engaged is not a college course, not a medical course, but a life course, for which the work of a few years under teachers is but a preparation."

Ambadas Pathak, M.D., is a semi-retired pediatrician/neonatologist who has actively practiced medicine for 33 years. Today he continues to teach and provides interpretative services. Dr. Pathak serves as the Chair of the Continuing Medical Education Review

continued on page 45

Medical School Fifty Years Ago

PERSONAL PERSPECTIVES

Bart Gershen, M.D.

I entered medical school in 1953. It was a time when medicine, although not quite rudimentary, was far less scholarly than it is today. Our mentors doggedly emphasized the role of a compassionate physician, one who–despite limitations in available therapies–would ensure that the patient received the best care obtainable in a kind and empathetic manner. Our university's goal was to educate physicians for what is now called family or primary care medicine –although in those days we referred to it as "general practice." Meticulous and lengthy histories and physical examinations were stressed, and diagnostic acumen was admired. We were trained to make difficult diagnoses, even though we were often unable to ameliorate or cure that disorder.

We concentrated on developing our clinical skills in taking histories and performing detailed physical examinations. We were constantly reminded of the extraordinary value of proficient cardiac auscultation, careful splenic palpation, ophthalmologic examinations, examination of skin, oral pharynx, nails, etc. We were urged to become precise observers, to listen carefully to the patients' words, how they were said, and what their body language revealed. Many of my classmates became consummate clinicians.

During my 50 professional years, I volunteered as an attending physician at a regional medical school, retiring as a Clinical Professor of Medicine in 2003. Residents often presented difficult cases to me for my evaluation. In all those cases, the single most striking feature was the virtual absence of a thorough history and a competent physical examination. It is true that the house staff generally reached the correct diagnosis, but they did so most often on the basis of specialized radiologic, ultrasound, and other laboratory assessments. Skillful clinical examination was not often in evidence. When I inquired what these physicians intended to do in the future, I was often told that they would likely enter office practice, perhaps by joining a large group. When I asked if they expected to have CT scans, MRI's, echocardiograms, etc. in their private office–and if they anticipated using some or all of this equipment on **each** follow-up visit, they universally acknowledged that it would not be practical (or reimbursable). I would then gently suggest that proficient clinical skills were indispensable in the longitudinal monitoring of office patients. They would all reluctantly agree.

Residents often presented difficult cases to me for my evaluation. In all those cases, the single most striking feature was the virtual absence of a thorough history and a competent physical examination.

The overall cost of medical care remains high and continues to rise–based at least to some degree on the common need for ancillary testing to establish a diagnosis. These supplementary tests are often essential for definitive diagnoses, and students have appropriately been taught their value. However, at the same time many generations of physicians have matriculated with little emphasis on the **clinical examination**. It is reasonable to assume that enhancing those clinical skills could render a number of auxiliary tests superfluous, which might facilitate a reduction in medical costs.

Unfortunately, as generations of medical students fail to receive proper grounding in a probative history and a thorough physical exam, these skills will ultimately diminish. Eventually they will become atavistic–a vermiform appendix to the body of medicine. In the end, the excellent physician will be defined as one who can perform the differential diagnosis of laboratory tests.

And ultimately our replacements will be created by IBM.

Barton J. Gershen, M.D., Editor Emeritus of Maryland Medicine, *retired from medical practice in December 2003. He specialized in cardiology and internal medicine in Rockville, Maryland. Dr. Gershen graduated cum laude from the University of Vermont School of Medicine in 1957, and was elected into Sigma Xi, the scientific research society.*

Medicine is in This Family's Blood

PERSONAL PERSPECTIVES

Harry C. Knipp, M.D. and David E. Knipp

The following is a conversation between Dr. Harry C. Knipp and his son, David. The Knipp family has four generations of fathers and sons who have become physicians, including George A. Knipp, M.D., Harry E. Knipp, M.D., Harry L. Knipp, M.D., and Harry C. Knipp, M.D. All are graduates of the University of Maryland School of Medicine. David will be the fifth Knipp family member to graduate from UMSOM.

Applications and interviews:

Harry C. Knipp, M.D.: During the summer before my junior year of college, I was involved in a serious accident at a car dealership where I worked. Laid up for a month, I thought about my future. With advanced placement (AP) credits, I realized that I met the requirements needed for medical school without having to attend my senior year of college. In September 1971, I applied to the University of Maryland School of Medicine (UMSOM). In October, I took the Medical College Admissions Test (MCAT), and interviewed at UMSOM in November. I was accepted before Christmas of that year. I had followed in my father Harry L. Knipp's footsteps. After WWII, he attended daytime, evening, and summer college classes for two years to amass enough credits to apply to UMSOM. Thus, like my great grandfather, we're M.D.s, but have no undergraduate degrees. My son *is* a college graduate and currently attends UMSOM. He will be the fifth consecutive generation Knipp to graduate from the school.

David E. Knipp: My story is more typical. I finished my junior year at the University of Pennsylvania majoring in Neuroscience with a minor in Chemistry. I took the MCATs in June. That summer, I worked in Neuroradiology at the Hospital of the University of Pennsylvania. Unlike most students, I took a risk and only applied to UMSOM. Happily, I was accepted.

HCK: My first interviewer, a friendly young Ph.D., discussed music, movies, and hobbies with me, exploring my non-scholastic interests. The second interview, with a senior surgeon, was more of a grilling. I was brusquely asked about leaving college early, tuition expenses, and who'd be paying. The voting age had just been lowered to 18 and it was right after the November election, my first time voting. Seeming disappointed that I *had* voted, he asked if I was "anti law and order" because of my vote against a local police station bond. Nevertheless, I was accepted three weeks later.

DEK: I was grateful to receive an early interview. Due to a schedule mix up, the Dean of Admissions personally took over my first interview! The session went smoothly and was actually relaxing. Instead of medicine and science, we discussed playing the sitar, favorite musicians, and the Ravens' prospects. Grades aside, I'm sure he wanted to see if I was well-rounded. Now, knowing my classmates, I find that everyone brings something unique, making for a well-balanced scholastic environment.

Harry E. Knipp, M.D.

Harry L. Knipp, M.D.

George A. Knipp, M.D.

Preclinical Curriculum:

HCK: In our first two years, we took courses concurrently; basic medical sciences in Year 1 and pathologically oriented courses in Year 2. The concurrent style resulted in difficult study, having to prepare for a test in one course every week, while keeping up with the other classes, too. With weekly tests, time to relax and recharge was rare. Unlike my father's experience in the late 1940s, we did benefit from voluminous pre-printed notes, but that didn't deter us from compulsively taking our own. It never failed that some bit of arcana that was downplayed in lecture, still managed to qualify as a test question. Like my father's class twenty-five years earlier, we all bought microscopes, and used them regularly for histology, microbiology, and practical tests.

DEK: In most areas, the approach to teaching has significantly changed since the 1970s. Block-style learning is now the norm. For several weeks at a time we focus on one coherent topic. Year 1 is organized by three months of anatomy, then biochemistry, then physiology. Year 2 focuses on infectious diseases; then, the pathophysiology and therapeutics of each separate organ system. Computers and the internet now dominate class and study hall. During two hours of daily small group activities, followed by two hours of lectures, professors look out over a sea of laptops. Every student may access upcoming lectures and notes, and full audio-visual recordings of all previous lectures. Using internet databases, it is easy to find information pertaining to any disease. Tests and microscopy are done on computers. We can leave instant anonymous feedback on every professor, topic, course, and test. Everyone benefits from this conversation on what works best and what might need updating.

continued on page 41

Historic Vignettes of Medical Education in Maryland

19th Century Surgeon's Kit

Sandra Rowland, M.S., M.A.

The art of the practice of medicine is to be learned only by experience; 'tis not an inheritance; it cannot be revealed. Learn to see, learn to hear, learn to feel, learn to smell and know that by practice alone you become an expert.

~Sir William Osler

Maryland Medicine holds a unique and significant place in the history of medical training. The history of medical education in Maryland is full of amazing stories, pioneering techniques, and larger-than-life figures. Along the way, MedChi, the Maryland State Medical Society, has been at the forefront of advancing the profession and professional education. The 1799 Charter granted by the Maryland Legislature establishing the Medical and Chirurgical Faculty (now MedChi, the Maryland State Medical Society) affirms the position of the Society for "…such purposes as they may judge most conducive to the promoting and disseminating of medical and surgical knowledge, or to alleviating the calamities and miseries of their fellow citizens."

Medical training in the eighteenth century relied heavily on models from Europe and European-trained physicians who found their way to Maryland. In the late 1700s, one of the most prominent Maryland physicians was Dr. Charles Wiesenthal, a Prussian immigrant to Baltimore who had served as physician to Frederick the Great. He opened a small anatomical school behind his residence on Fayette Street and introduced cadaver dissection. While the technique was used in Europe, it was not an accepted practice in the new nation and he encountered significant resistance from the population. His anatomy class was disrupted by a mob in 1788 that destroyed the furniture and snatched the corpse of the executed murderer the assembled students were dissecting.[1]

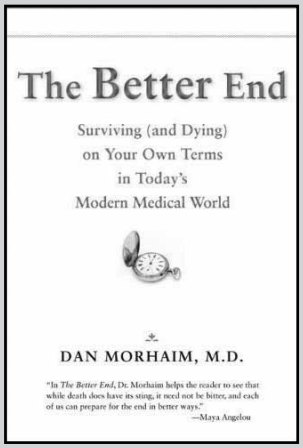
A few years later, the Medical and Chirurgical Faculty was instrumental in establishing the first medical school in Maryland. At the 1802 annual Faculty meeting, Dr. John Davidge suggested that a medical college was needed and a small committee was appointed to study his proposal. Five years later, Dr. Davidge became the first Dean of Maryland's College of Medicine (now known as the University of Maryland School of Medicine)—the first public medical school and fifth oldest in the nation. In 1840, faculty members were also instrumental in establishing the world's first dental school, also at the University of Maryland.

No recounting of Maryland's role in medical education would be complete without recognizing the enormous contributions of Sir William Osler. In 1888, Dr. Osler was recruited by Dr. William Welch for the newly established Johns Hopkins University School of Medicine as one of the "Big Four" to serve as Physician in Chief and Professor of Medicine. Based on programs in Europe, he set up the medical residency system in the United States, bringing medical students into the hospital for "hands-on" learning. He believed that students could learn more in 15 minutes at the bedside than in hours in the classroom. He viewed medicine as a calling, more than just an occupation, and he is still regarded by many as the greatest physician of all time. He was fond of saying, "He who studies medicine without books sails an uncharted sea, but he who studies medicine without patients does not go to sea at all." Dr. Osler was very active with MedChi, and was instrumental in raising funds to build the current location at 1211 Cathedral Street in Baltimore. Dr. Osler was also the driving force behind expanding the medical library and he hired the first full-time librarian, Marcia Noyes, who lived at the Faculty building for 50 years and established one of the first medical library cataloguing systems.

1799, Dr. Charles Frederick Weisenthal

1896 Current Applicator

continued on page 41



The Better End:
Surviving (and Dying) on Your Own Terms in Today's Modern Medical World

Dan Morhaim, M.D.
The Johns Hopkins University Press, 2012
Hard cover - $45.00 Paperback - $18.99

Reviewed by John W. Buckley, M.D.

"The Descendants" is a popular movie in which advance directives are integral to the plot. With the clearly stated wishes of a mother in her forties with a brain trauma, there is still plenty of drama and pain. It is a movie worth seeing. Without the advance directive, I might still be in the theater wasting my time while watching the family waste theirs trying to communicate with a person with no CNS activity.

Maryland Delegate Dan Morhaim, M.D., has written an important and useful book. The topic is certainly a familiar one that merits an occasional flurry of newsworthy activity involving a celebrity or a legislative battle. The news articles are always sensational but with limited focus. But Hollywood and Oregon seem far away. The resulting attitude remains: death happens, but not to me.

The 122-page paperback version of *The Better End* covers practical end-of-life decisions with surprising breadth. A series of short chapters (3–10 pages) addresses topics related to advance directives such as legislation, hydration, palliation, medication, resuscitation, cremation, and, yes, even marijuana and Jack Kevorkian. The information will not be new to physicians, but it is very well organized and presented.

Many chapters start with an end-of-life story. Any nurse or physician will recognize these as the real thing. We have known and cared for these people. We have also witnessed the outcomes, whether painful or peaceful. Each story, unembellished, makes an excellent launching pad for the specific chapter's topic.

The author's style is expository and engaging, with little fluff. He manages to intertwine his personal perspectives with the clinical stories. As a medical trainee, emergency room physician, and state legislator, Dr. Morhaim has seen "The End" from many sides. Medical jargon is minimal. Any "trade" terms are clearly explained. Occasional errant phrases such as "vast majority" and "transition from this world to the next" are unexplained, but do not detract from the message. Important paragraphs are given emphasis by indenting with fine print when they should be boxed or bolded. There could have been more specific examples of detailed wishes.

Mercifully, there are no statistics, no psychological interpretations, no advice about casket attire, no scientific theories, and no sales agenda. *The Better End* has no false notes. The index is a nice feature. Even more useful is the state-by-state list of websites for accurate directives.

In keeping with the title pun, this book is essential reading for anyone who is going to die. *The Better End* is a clearly written, easy-to-read plea for logic and for long-range planning in a world full of neither.

All physicians should recommend this book. A copy or two in the waiting room (even of dermatologists and pediatricians) would make sense. The most profitable use would be for third-party payers to buy in bulk and distribute copies to subscribers and providers alike. The savings of emotion and of money could be a monument to Dan Morhaim's effort.

John W. Buckley, M.D., is a psychiatrist practicing in Towson, Maryland, and is a member of the Maryland Medicine *editorial board.*

Medicine is in this Family's Blood...

continued from page 38

Class Composition:

HCK: Thankfully, the percentage of women in medical school has grown to parity. Looking back over our family's experience at UMSOM, I have a picture of my great grandfather's 1887 medical class that shows nine very young men and no women. My grandfather's 1923 cohort had two women in a class of 52 physicians. By 1951, my father's yearbook shows four female graduates out of 96 young doctors. In 1976, 21 women physicians graduated in my class of 157. The majority of my classmates came directly from college, seven entering early after their third undergraduate year, and one bright woman after her second! Approximately 20 percent of my class didn't enter straight from college, but were first involved in the military, pursuing other degrees, or working as educators, engineers, or homemakers, raising children.

DEK: Today, the number of women graduating, and the number of students who take time off after college have both markedly increased. From 4,925 applicants, our class of 160 is 58 percent female. Ages range from 21-34. To my knowledge, I am one of twenty students admitted directly from college. My classmates are well-rounded and uniquely talented individuals. Whether as an EMT, lab researcher, medical journalist, or mother of four, each has valuable prior experience to contribute in our small group discussions. As much of medicine is a team-based endeavor, having broad insights from diverse perspectives should prove invaluable as we proceed in our education and practice.

Over the nearly 40 years between the times David and I each began medical school at the University of Maryland, we have observed a number of changes in the application process, class make up, and basic science curriculum. Whether the approach is better today than 40 years ago is better or not remains to be seen.

Harry E. Knipp, M.D., graduated from the University of Maryland School of Medicine in 1887 and began general practice in West Baltimore at his office at Fremont Ave. and Lanvale St.

George A. Knipp, M.D., a 1923 UMSOM graduate, practiced general medicine and pediatrics on Edmondson Ave. in West Baltimore until his passing in 1964.

Harry L. Knipp, M.D., FAAFP, UMSOM 1951 and a past president of the Maryland Academy of Family Physicians, joined his father's practice in 1953 and treated patients in West Baltimore for over 40 years.

Harry C. Knipp, M.D., FACR, UMSOM 1976, is a diagnostic radiologist with Advanced Radiology in Baltimore and Carroll counties and is a former chairman of the Maryland Board of Physicians.

David E. Knipp is a summa cum laude graduate of the University of Pennsylvania, and is a member of the UMSOM Class of 2014, with an interest in neuroscience and traumatic brain injury.

Historic Vignettes of Medical Education in Maryland...

continued from page 41

Maryland's medical society has been key in promoting standards for education and the licensure of physicians since its inception in 1799. In an era before large medical school libraries, online journals, and instant access to information, MedChi and its library educated members about new medical advances and techniques by serving as the central repository of medical texts and journals from all over the world, and the Faculty served as a gathering place for lectures and medical education. At its height, the library fielded requests from 70–80 physicians daily from all over Maryland. Responses would be sent by mail or, in urgent cases, read over the phone.

These cases reflect just a few of the many contributions made in Maryland by our physicians toward the evolution of physician training. *Maryland Medicine* continues this great legacy as a powerhouse in the dissemination of medical knowledge.

Sandra Rowland, M.S., M.A., is Executive Director of the Center for Healthy Maryland at MedChi, the Maryland State Medical Society.

Photos are from MedChi, the Maryland State Medical Society History of Maryland Medicine. Permission to use photos granted by the Center for Healthy Maryland.

1. Sewall, Jane Eliot. (1999.) *Medicine in Maryland: The practice and the profession 1799–1999*. Baltimore: 70.

Alliance to MedChi Annual Convention (May 11-12, 2012)

Wisp Resort and Convention Center, 296 Marsh Hill Road, McHenry, MD 21541
Phone (301) 387-4911 • www.wispresort.com

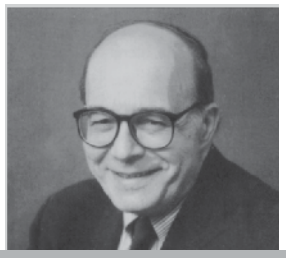
Wisp is a beautiful resort in Western Maryland. It is a place you, your spouse and children will enjoy.

Enjoy **Mother's Day Weekend** there with your family. The Alliance has a small block of rooms reserved for the nights of May 11th and 12th, 2012 at a rate of $99.00 plus taxes. When you make the reservation ask for the **"Alliance to MedChi" rate** (1-800-462-9477).

Reservations for the Alliance Meeting Breakfast and Lunch please contact Mano Nava at 301-723-0446 or e-mail mano_nava@hotmail.com.

The resort has a variety of activities for you to enjoy during your stay.
Some of the activities are:

- Sewickley Spa
- Balanced Body Studio
- Health Club
- 18-hole Golf Course - one the "100 Must Play Courses in the Mid-Atlantic" according to Golfstyles Magazine
- Skate Park & Rentals
- Flying Squirrel Canopy Tour
- Watersports including Waterskiing, Wakeboarding and Whitewater Rafting
- Pontoon Boat Tours
- Paddleboard Tours
- Kayak Tours & Rentals
- Greg Rouse Watersports Center
- Deep Creek Lake Beach Hut
- Mountain Biking - freeride trail and downhill trails, rentals, tours, clinics
- Children's programs, day camps and Kid's Night Out programs
- Bonfires
- Fly Fishing
- Flatwater Kayaking
- Scenic Chairlift Rides
- Mountain Coaster
- Paintball
- Disc Golf
- Off-Road Mountain Buggy Tours
- Segway tours
- Day Camps
- Corporate or family teambuilding events



Potpourri

WORD ROUNDS

Archeologists have uncovered evidence that **asparagus** was eaten by hominids living in Egypt 20,000 years ago. This vegetable, originally classified in the Lily family along with onions and garlic, is a perennial with thick roots and fluffy leaves. It has a delicate flavor and is known to be a mild diuretic. Its name derives from Greek *asperagos*: "to sprout." Many who have eaten this vegetable can attest to the strong urinary odor it causes – but only 20 percent of people have the autosomal olfactory genes to do so. The rest are unable to sense that odor.

In 1806, two French chemists (Vauquelin and Robiquet) isolated the very first amino acid. Since it was derived from asparagus juice they named it **asparagine.** In 1826, **aspartic acid** was obtained from asparagine, and later shown to be important in both the Urea (Ornithine) Cycle and the Krebs (Citric acid) Cycle. It is also responsible for the malodorous urine some of us can smell after ingesting asparagus. In 1965, the methyl ester of aspartic acid – named **aspartame** – was synthesized and has found use as an artificial sweetener. It was originally patented and sold as **NutraSweet**. However, since one of its metabolites is phenyalanine, caution is necessary for children born with congenital phenylketonuria.

There is a milky juice that emanates from cut **lettuce**. In Latin this liquid is known as *lactuca: "lettuce,"* and has given its name to the vegetable itself. *Lactuca*, in turn, stems from *lac*: "milk" – as in lactose, lactase, and lactation. The term **galaxy** stems from Greek *galaxias*: "milk," which in Latin became *lac*. Our galaxy was so named because of the glowing band of stars that arc across the sky, appearing "milky" to the unaided eye. (Through a telescope it is obvious that the band is composed of millions of individual stars.) Our galaxy was originally thought to encompass the entire universe of stars. Early telescopes revealed vague, fuzzy patches of light, known as nebulae, which were historically thought by astronomers to lie within our Milky Way Galaxy. Then, in 1920, Heber D. Curtis suggested that those "nebulae" actually represented independent and quite distant islands of stars. His idea was conclusively proven by Edwin Hubble in 1923. Once these collections of stars were shown to be independent entities, they also became known as galaxies – even though they are not part of our Milky Way system.

The **radish** is a vegetable the root of which is edible – thus its name from Latin *radix*: "root." The square root sign (√) is called a **radical**, which derives from the possessive form of *radix - radicalis*: "having roots." One who wishes to profoundly change society – to tear it out at its roots, is called a **radical**.

The word **cabbage** stems from Latin *caput*: "head" (since it tends to resemble one). From *caput* the term evolved into the French *caboche* and ultimately to the English cabbage. During WWI, the French began to refer to their German enemy as those with a "*tete de la caboche*" – the head of a cabbage – or simply "cabbage heads." Ultimately, the phrase was shortened to **boche**, a derisive term for Germans that persisted well into the 1940s. In Holland, the full name for a cabbage was *cabbage-koole*. The term slaw derives from Dutch *sla*: "salad." Thus koole slaw or **cole slaw** means "cabbage salad."

Another vegetable within the cabbage family is **cauliflower**, a plant the edible parts of which are its dense, white flowers. Cauliflower stems from Latin *caulis* (cabbage), plus French *fleur*: "flower." **Broccoli** is also in the cabbage family. Its name comes from the Italian *broccolo*: "a cabbage sprout." All of the vegetables I've mentioned – and numerous others – are within the botanical family *Cruciferae*, since many of them display leaves bearing four petals in the shape of a cross. (*Cruciferae* stems from Latin *crux*: "cross", as in crucifix.)

Continuing this essay on edibles, I should mention the origin of some other familiar foods. The **lima bean** comes from Lima, Peru and the **frankfurter** is named for its German city of origin Frankfurt. The same is also true of the **hamburger** from Hamburg, Germany, **bologna** from Bologna, Italy, and the **wiener schnitzel** from Wien – that is Vienna – Austria. The term *schnitzel* derives from German *schneiden*: "to cut," and refers to a little slice – a small cut or a "cutlet" – of veal or pork. (Bologna has been corrupted and misspelled "baloney" in English, changing its meaning from a type of sausage to someone talking nonsense – perhaps reflecting the supposed variation and inferiority of a bologna sausage.)

Sauce **béarnaise** originated from the French province of Béarn, located in the Pyrenees Mountains. **Mayonnaise**, made from egg yolks, butter, vinegar and seasoning, derives its name from Mahon, the capitol city of the island of Minorca. In 1756, during the Seven Years War, the French Duke of Richelieu captured that island from the British after a prolonged siege. During the blockade the Duke's chef ran out of béarnaise sauce and was forced to create a new dressing for his employer. We have that anonymous chef to thank for the result. (Incidentally, the island of Minorca – one of the Mediterranean islands which now belong to Spain – was given that name in order to distinguish it from a larger sister island known as Majorca. (Major, minor – you figure it out.)

There are many varieties of cheese in the world, most of them named for its city, province or country of origin. For example there is **Edam** from Edam, Netherlands, **Roquefort** from Roquefort, France, **Cheddar** from Cheddar, England, **Gorgonzola** from the village of Gorgonzola, Italy and **Parmesan** from the city of Parma, Italy. (Actually, the latter cheese is made in Parma as well as the adjacent city of Reggio, resulting in the Italian name for this cheese: **Parmigiano-Reggiano**.)

continued on page 45

CLASSIFIEDS

EMPLOYMENT

DIRECTOR OF OPERATIONS: MedStar Physician Partners - Montgomery County. Will oversee multiple physician practices (specialties include Endocrinology, Surgery, Family Practice and Internal Medicine) located throughout Montgomery County area. Requires a Bachelor's degree in Business/ Health Administration or equivalent combination of education/experience and experience managing multiple physician practices. 7 or more years of experience in a managed care or ambulatory care setting preferred. To APPLY, please visit: WWW.MPPJOBS1.COM.EOE.

INTERNAL MEDICINE: Call Sharing. Solo physician in Olney, MD, looking to share call with other physician(s) in nearby area. Flexible. Call 301.768.2169.

INTERNIST: To join a solo internist in Riverdale, MD. Benefits include a great salary, CME, retirement plan, etc. Call 301.277.8100.

INTERNIST: Part-time. Join an extremely successful internal medicine group practice in Bethesda, Maryland. Seeking a part-time BC/BE Internist to job share with an established female physician as part of our group of 8 Internal Medicine physicians. Position is 5 sessions per week and is out-patient only. This practice is busy, growing, and offers the potential for partnership. Please email curriculum vitae to alt@ppa.md.

PEDIATRICIAN: Retiring Pediatrician seeking physician to take over practice in Gaithersburg. Contact physician at 301.938.1651.

PRIMARY CARE PHYSICIAN: Growing practice in Silver Spring seeks part-time physician. Friendly environment, flexible schedule, competitive salary. Contact us at office@mhcmd.com or 301.452.4062.

URGENT CARE PHYSICIANS AND STAFF: Rockville, MD. Need enthusiastic Physicians, PAs or NPs, Nurse Administrator, techs, LPNs, X-ray techs, & MAs for FT & PT positions. Reg: BC/BE physicians in EM or FP. IM with PEDS experience. Flex work hours. Competitive compensation. Great community! Paid malpractice and tail. Send resume to Urgentcare@myphysiciansnow.com.

PRACTICE SALES, MERGERS, ETC.

FREDERICK: (See FOR SALE OR LEASE below)

LEASE/SUBLEASE/SALE

BETHESDA: Attractive office space for rent in physician's practice w/private office, exam rooms, and shared waiting room ready for use. Walking distance to Metro, parking garage, or on street and county garage across street. Please call Avelene at 301.656.0220.

CATONSVILLE: For sale or lease. 1.000 sq.ft. medical office at 716 Maiden Choice La. Suite 206 with 2 exam rooms, 2 physician offices, lab area. Located across from Charlestown Retirement Center. Close to St. Agnes Hospital and I-695. Ample parking. View of woods from all windows. Monthly rent: $ 1,675 for sale: $ 180,000. Call Anna at 410.321.8889.

COCKEYSVILLE: Available May 2011. 2000 sq.ft., 6 exam rooms, 4 business/ physician offices, one lounge, lab area, large waiting room, storage, and excellent parking. Call 410.628.6100 for more information.

FOREST HILL: Office space available in a quiet professional building. Includes utilities, phone, copy, fax machine, receptionist area, waiting room, and parking. Two examination rooms and all other necessary accommodations for an MD (sink, closets, file areas, etc.). Part-time availability (1-3 days a week). Please contact Dr. Schmitt at 443.617.0682 or Dr. Legum at 410.852.0582.

FREDERICK: Office space to share. Approx. 2000 sq.ft. Bright & modern office on Guildford Dr. available to share (with some PT equipment). Waiting room and front desk. Perfect for internal medicine/family practice looking to expand to Frederick area. Hours and rent negotiable. Inquiries to goldfay2011@gmail.com.

FREDERICK: (FOR SALE OR LEASE) Available immediately fully fitted out Medical Suite in a medical condominium building. This medical suite is fitted with 5 private offices, 10 exam rooms, waiting area, lab, storage, conference room and break room. Call Jay Nathan at 240.405.1023 or 301.471.8251.

GAITHERSBURG: Successful pediatric clinic, fully staffed, seeking physician to take over practice. Large office. and well established in the area. To inquire call Robert Gottschalk at 202.530.3300.

GERMANTOWN: Medical office space for lease in Germantown. 4000 sq.ft., Lots of Free Parking, Easy Terms. One Block to New Holy Cross near Montgomery College, Germantown. Call 301.502.1833 or 301.515.6971 after 6 pm.

GERMANTOWN: Ambul., Surgery Center in Germantown approved by Medicare, AAAASF for Lease, Partnership, or Sale. Multispeciality, GI, PM, Urology, Surgery. One Block to New Holy Cross near Montgomery College, Germantown. Call 301.502.1833 or 301.515.6971 After 6 pm.

MONTGOMERY VILLAGE: For rent. GYN office located in Montgomery Village Professional Center. Available for sublet. Other specialties welcome. Each 4 hour usage is $200. (Monthly $800). Call Nina Vann Jeanes, M.D., at 301.670.1873.

ROCKVILLE: 1,200 sq. ft. office next to Shady Grove Hospital. Available afternoons and weekends. 301.424.1904.

ROCKVILLE: Medical Office Space for Sublease, Shady Grove Rd. area: Fully furnished office consists of approx. 750 sq ft office space including waiting room, reception/work area, 2 exam rooms, office, Tab filing cabinets, rest room & small kitchen counter/sink. Just off Shady Grove Road on Research Blvd., convenient to 270 and Shady Grove Adventist Hospital. Please email johnkellymd@rapiddsl.net, or call 301.212.9200.

SILVER SPRING/WHEATON: Lower your overhead expenses by subleasing or sharing medical office space. Luxurious penthouse suite with 3200 square feet, 7 treatment rooms, surgery center, equipment and staff available. All medical specialties welcome. Call: 301.949.3668.

SILVER SPRING, DOCTORS MEDICAL PARK: Georgia Ave. and Medical Park Drive. Close to Holy Cross Hosp., ½ mile north of #495. 3 building medical campus totaling 95,000 sq. ft. with over 100 medical practitioners and Clinical Radiology's HQ. 2 suites 1400-2750 sq.ft. avail. immediately. Call Steve Berlin at Berlin Real Estate, 301.983.2344 or steve@berlinre.com.

TOWSON: Office space: 1800 sq ft with 3 exam rooms available for part time sublease in the Odea Bldg at 7505 Osler Dr., Towson. Call 410.321.0882.

TOWSON: 2,087 square feet of second floor medical space available for lease at 660 Kenilworth Drive (directly across from Towson BMW). Suite is fitted for medical professional and landlord will build out to suit tenant's needs. Lease rate includes full utility and janitorial service. Attractive two story professional building with convenient and ample free parking. Caring on-site ownership and management. Excellent access to I-695, I-83, Timonium and downtown Baltimore. To discuss or see, call David Miller at 410.321.9558.

WHITE MARSH: Office to share. 5 exam rooms incl. procedure rm. Nicely furnished. Call 443.690.4062.

WHITE MARSH: Make me an Offer! Sublet my nice 2150 sq ft doctor's office on Belair Road in White Marsh. 5-6 exam rooms, lots of parking and easy access. Call 443.690.4062.

OTHER

CLINICAL TRIALS: We are recruiting motivated, detail-oriented physicians as sub-investigators for diabetes-related clinical trials. If interested, please contact 301.770.7373.

FOR SALE

ORTHOPAEDIC OFFICE EQUIPMENT FOR SALE: Silver Spring solo orthopaedic surg. Retiring. For sale: 2 Midmark 404 exam tables, 1 Ritter 306 hydraulic exam table. Amsco Eagle 10 counter top sterilizer, Detecto scale with height bar, 2 cast stands, Cast saw with vacuum stand, 2 double x-ray view boxes, 2 metal office desks one with return, Metal bookcase 35x44" 4 shelves, 2 file cabinets 4 draw, lateral file 2 draw, Wood file cabinet ,2 draw, .5 single, 3 double wait room chairs, Magazine wall rack 6 slot, 3 end tables 21x23x18". Call 301.989.9500.

Potpourri...

continued from page 43

Following a meal, one might order a dessert of **pralines** and **coffee**. Coffee was initially obtained from the Kaffa region of Ethiopia, southwest of the city of Addis Ababa, and thus acquired its name. The use of coffee as a beverage was first recorded in the country of Yemen, later spreading to India and Europe. It was first used in England around the middle of the 17th century. Nicknames for coffee include **mocha** and **java** – the first deriving from Mocha, Arabia where it is the common name for coffee. The second is from the island of Java, Indonesia where an exceptional variety of coffee bean is grown.

Finally, the **praline**, a candy treat composed of baked almonds and carmelized sugar, was developed by a cook who worked for – and named it after –French Marshal du Plessis-Pralin (1598-1675). During the 1800s, a New Orleans chef substituted pecans for almonds and added cream to the mixture to create the American praline, for which that city is noted.

As you have observed, this essay is titled "**Potpourri**." The current sense of this word refers to a blend of fragrant dry flowers and spices, often held in a sachet, and employed to sweeten room air. Potpourri may also refer metaphorically to a medley or assortment of various ideas or objects. The Scandinavian term **smorgasbord** (Swedish *smorgas*: "buttered bread" plus *bord*: "table"), a buffet meal with a large assortment of dishes, has a similar connotation – namely, that of a mélange of victuals. It also can refer to an assorted collection of goods or ideas. Nonetheless, the original French meaning of **potpourri** was a "pot of stew," a direct translation of the Spanish *Olla Podrida* meaning a mixture of seasoned meats and vegetables.

I have provided you with some of the ingredients. It's your job to cook it.

Barton J. Gershen, M.D., Editor Emeritus of Maryland Medicine, *retired from medical practice in December 2003. He specialized in cardiology and internal medicine in Rockville, Maryland.*

Lifelong Learning in Medicine...

continued from page 36

Committee of MedChi and has done so for over a decade. Steven F. Crawford, M.D., a practicing psychiatrist, is the Associate Medical Director of the Center for Eating Disorders at Sheppard Pratt. He has served as the Chair of the Committee on Scientific Activities of MedChi for the past eight years. Frank C. Berry, CCMEP, is the Director of Continuing Medical Education for MedChi, the Maryland State Medical Society. He has worked in the medical education and healthcare field for more than 20 years.

The following are references that are valuable to note.

1. Celebration of the Sesquicentennial of the Medical and Chirurgical Faculty of the State of Maryland.

2. CME as a Bridge to Quality, Leadership, Learning, and Change Within The ACCME System.

3. *The AMA PRA Handbook, Version 2010*. Available on the AMA Website under the CPPD section.

The Changing Face of Medical School Graduation

This collage is made up of the following: Photographs of The University of Vermont School of Medicine including photos of the graduating classes of 1955 and 1997,permission granted by Edward Neuert, University of Vermont College of Medicine Magazine. The third photo is from the 2011 graduating class of Edward Via College of Osteopathic Medicine and published with permission from Edward Via College of Osteopathic Medicine, Blacksburg, VA.

Protect your practice from getting burned.

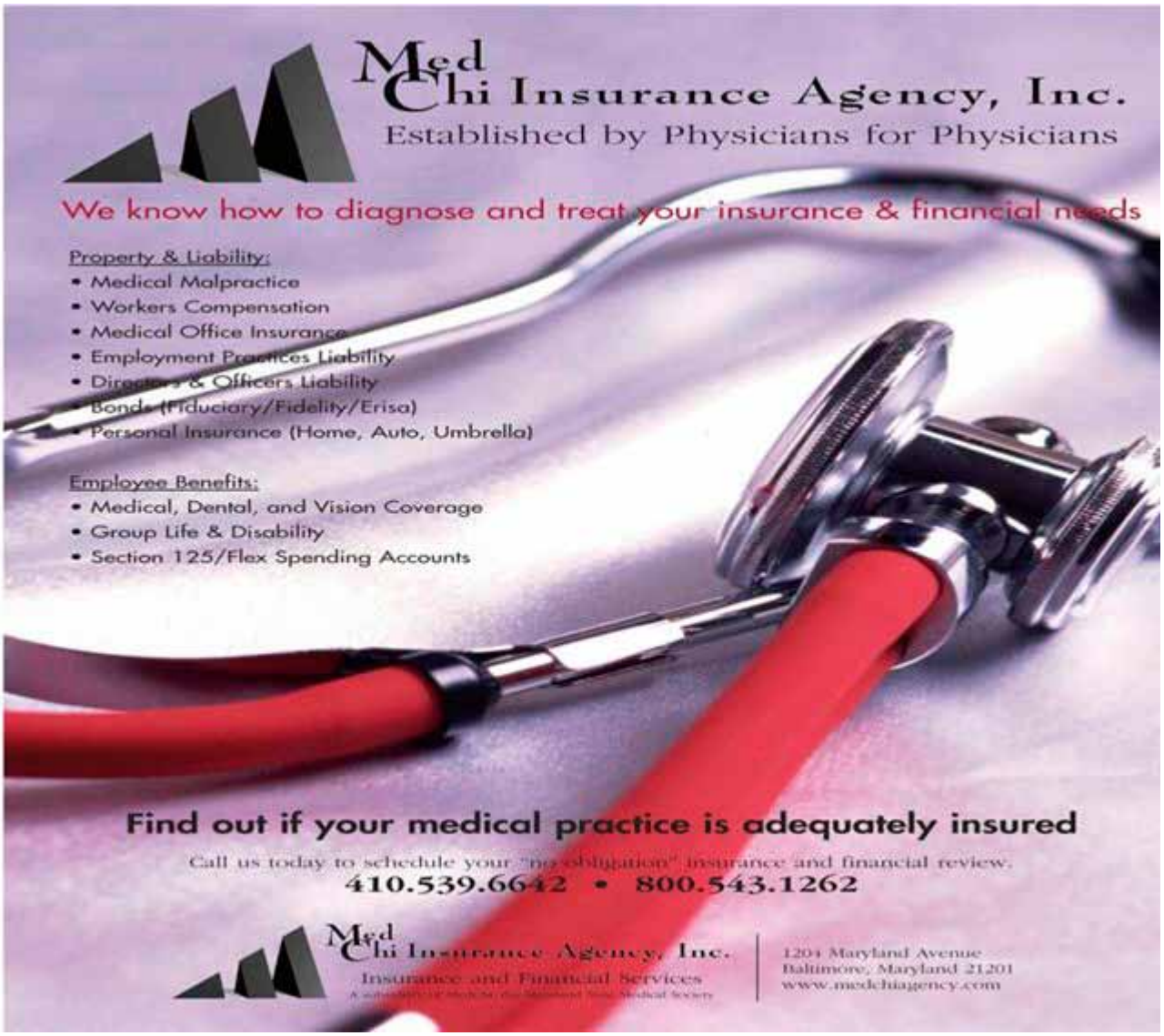
Maryland's largest medical professional liability insurer is always on call for you.

In today's heated legal environment, even the best Doctors feel the constant threat of litigation. That's why there's MEDICAL MUTUAL, the company created and directed by Doctors to safeguard your practice and professional reputation. Day in and day out, we're here for you, providing high quality professional liability insurance, the most proactive claims defense, and the most dependable financial strength and stability in Maryland. With just one call, we'll rush in—and put your worries out. It's no wonder why more Maryland Doctors are protected by MEDICAL MUTUAL than any other insurer.

MEDICAL MUTUAL

Liability Insurance Society of Maryland

225 International Circle | Hunt Valley, Maryland 21030
410-785-0050 | 800-492-0193



MedChi
The Maryland State Medical Society
1211 Cathedral St. ▲ Baltimore, MD 21201

Address Service Requested

Presorted Standard
U.S. Postage
PAID
Pemit No. 48
Merrifield, VA