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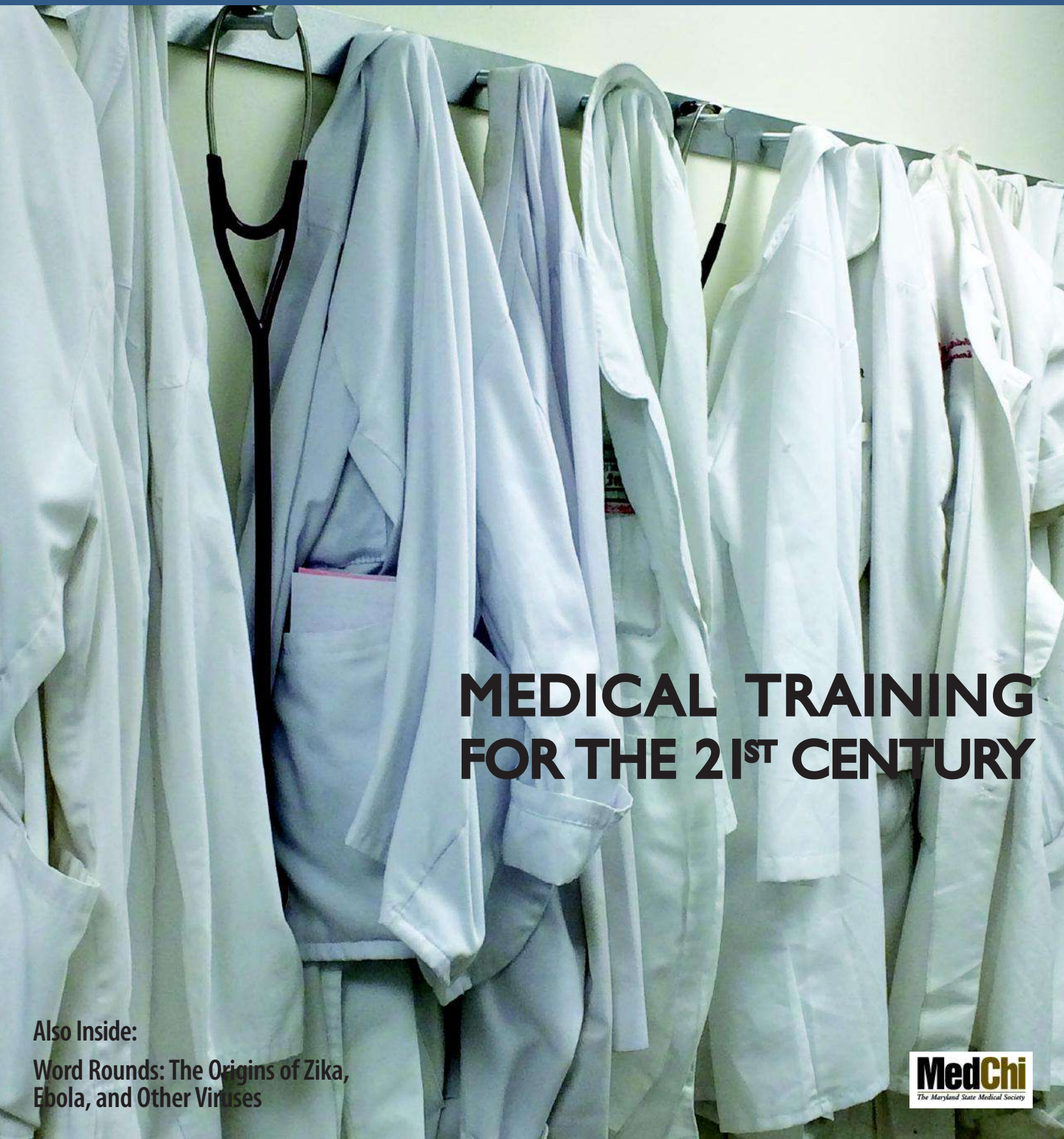

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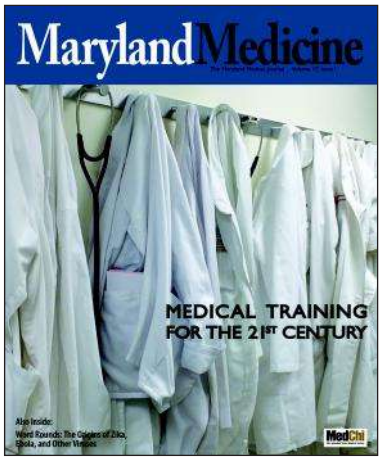
INSIDE



This issue of Maryland Medicine *focuses on the medical training pipeline of the future and the issues that need attention.*

Departments

President's Message 5
Brooke Buckley, MD

CEO's Message 7
Gene Ranson, III, Esq.

Editor's Corner 9
Bruce M. Smoller, MD

Maryland Health Perspective: Hospitalist Co-management of Pediatric Orthopaedic Surgical Patients at a Community Hospital 34
Karan Dua, MD, et al.

Word Rounds 40
Barton J. Gershen, MD

The Last Word 42

Features

Introduction 11
Taylor DesRosiers, MD, and Tyler Cymet, DO

The Politics of Debt 13
William Pearce, MD, and Alicia L. Smith, MSII

An Education of the Future: A Debate on Physicians' Training Options 15
Taylor DesRosiers, MD, and Naftali Tzimet, DO

How Is Graduate Medical Education Funded, and How Will That Change? 17
Alicia Smith, MSII, John R. Corker, MD, and Dana Block-Abraham, DO

The 80-Hour Work Week: Graduate Medical Education's Friend or Foe? 19
Dana Block-Abraham, DO, and Carl G. Streed, Jr., MD

Envisioning Transformations in Medical Education 21
Dennis Gingrich, MD, Shou Ling Leong, MD, Britta Thompson, PhD, MS, and James Kent, MSII

Current Trends In Medical Education: What Does Our Future Hold? 23
Douglas Phelan, DO, Aaron George, DO, and Travis E. Meyer, MD

The Unionization of Medical Residents: A Debate 25
Richard Bruno, MD, MPH, and John R. Corker, MD

Teaching Health Centers Are a Viable Way to Expand Primary Care in Maryland and the United States 27
Elizabeth Wiley, MD, JD, MPH, and Richard Bruno, MD, MPH

The Shift: When People Become Patients 29
Taylor DesRosiers, MD, et al.

The Single Graduate Medical Education Accreditation System 32
Alegneta Long, MPP, and Stephen Shannon, DO, MPH

2015 MedChi Necrology 37

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The Healing Power of Graduate Medical Education

PRESIDENT'S MESSAGE

Brooke Buckley, MD
@medchipresident

The topic of graduate medical education (GME) for this issue of *Maryland Medicine* comes at an interesting time. It is the middle of a uniquely strained presidential election year; it is during the match, fellowship, and job hunting season; it is one year before the birth of a general surgery residency at my community institution; it is at a time when Western medicine is slowly shifting to a wellness focus instead of disease treatment; and it is at a time when a sorely needed national conversation about physician burnout is finally surfacing in mainstream journals and lecture halls.

What is burnout? As with most important questions, I turned to Google for a definition. Burnout is "the reduction of a fuel or substance to nothing through use or combustion." I could relate to this definition. So what about wellness? Wellness is "the state or condition of being in good physical and mental health." I understand, but have a hard time relating to, this definition.

I decided to text a friend. My college roommate from Johns Hopkins followed her path to a divinity degree from Harvard and is a yogi who shares meditation practices with her students.*

"I'm writing an editorial about graduate medical education, but I really want to talk about wellness, I feel like they are linked.... Thoughts?" Her response was gold. "The only way you get wellness is BY paying it forward….You quite literally receive what you are giving. I don't know who I would be without my students. Whatever you want, give it away and it's yours."

This is where I want to spend the remainder of my career and my MedChi presidency.

My medical school mentor took his own life, as did one of my junior residents. For me, and I suspect for most of you, burnout is deeply personal. Clearly, there are lesser forms of burnout—chemical dependency, early retirement, modification to lifestyle careers, shift to industry or administration, and general outward frustration with the realities of the profession. All speak to levels of stress that are feeding a fairly unattended fire. We live in a profession in which we are expected to internalize and suppress our fears, our sadness, our guilt.

On Saint Patrick's Day of my chief year, I lost a boy to a disrupted aorta from a car accident. His final expression is forever burned in my mind's eye. As I ushered my junior residents back to our twenty-four hour call duty, I thought it was strange that nurses and environmental workers were asking to go home because of shock and grief. The boy's chest was cracked in transport as a final attempt at a miracle. People were exposed to our "work" who should not have seen this process. I thought the ensuing debriefing was somewhat silly…It was just a day at work… This is what we do. But I also remember how deliberately my intern, nearly the same age as this boy, sewed up the deceased's open chest in the trauma bay. As his chief, I gave him extra time without chiding to complete this personal ceremony. Meanwhile, I focused on my chiefly skill in avoiding a bloodbath on my green clogs. Defense mechanisms. Not healing. No road to wellness on this path. One more penny taken from my jar.

We know that young physicians choose fields based on income and lifestyle. We know that people (not just women) consider their lives an equation that contains variables of how and where they spend their time. Practicing physicians converse about lack of work ethic and hour restrictions. We complain and ridicule. We call them unprepared and offer that only the finest Ivory Towers are worthy of educating. We remind them they can never be as good or as versatile as the old masters. We withhold compassion. We shame them into super-specialization via multiple fellowships to prove they are worthy of the shoulders of giants.

Are we too tired to embrace the students who stand in the place from which we came? Have we forgotten the art of healing is magic? Evolution only changes the lens; it does not destroy the magic? Physicians in training are sponges for our knowledge and our experience. Why is our instinct to withhold it as a prize for the proven? Has our fuel combusted to nothingness? Were we seeking a cure for burnout in expected blind participation of the next generation of physicians? How can we help them if we cannot even help ourselves?

What if we drew them in and shared the miracles of saving a life? What if we encouraged them to seek their path with their heart and knew we would offer a safety net as a teacher, or a senior partner, if what they really wanted was to be a rural generalist? Is there ever "enough" training for your first really sick patient when you are truly alone as the attending physician? What if we talked about the pain we carry as we hold the hand of a dying patient that we cannot cure? Could we find a path to wellness?

Yes, GME IS all kinds of technical details. It is certification and hoops that will be discussed among these pages; but it is also humanity. It is the transfer of the sacred knowledge of medicine. It is remembering who we are. GME is an opportunity to give what we have been given and to receive the healing that will reignite our flame. We all have knowledge to share. Even our Western science demonstrates that happy doctors make happier and healthier patients. We are obligated to find our professional wellness, not just treat our burnout disease. Participating in the education of junior physicians is our opportunity—our duty to ourselves and our patients—to heal the healers.

*Laura Parris, MTS Harvard Divinity School, georgetownyogatherapy.com.

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CEO'S MESSAGE

Gene Ransom, III, Esq.
@GeneRansom

Our slogan "your practice, your resource, your profession" is on the bottom of our letterhead and appears in various places throughout the MedChi office and on our website. It's more than just a slogan. It represents your collective commitment derived from our mission "to serve as Maryland's foremost advocate and resource for physicians, their patients and the public health." A commitment best demonstrated through our work with continuing education.

As Sir William Osler, MD, so aptly stated, "More clearly than any other, the physician should illustrate the truth of Plato's saying that education is a lifelong process." The process of lifelong learning to which Dr. Osler refers is the foundation of continuing medical education, or CME. CME is the means by which physicians improve their competence, their performance, and their patients' outcomes. It is the essence of continuing professional development. MedChi is committed to CME that is evidence-based, clinically relevant to all learners, valid in content, transparent and free of bias or commercial influence, and grounded in the principles of adult learning.

The MedChi Department of Continuing Professional Development (DCPD) achieves this mission through its work in two areas: (1) the development, planning, design and implementation of educational activities that strive to meet the needs of physicians; and (2) a recognized system of accreditation for intrastate organizations that wish to provide accredited CME offerings. MedChi's DCPD provides accreditation review, maintenance of certification, and educational support to these organizations.

The Accreditation Council for Continuing Medical Education (ACCME) accredits the DCPD to provide CME for physicians and organizations. DCPD has had this distinction since 1981. MedChi's current accreditation status with the ACCME is Accreditation with Commendation, the highest level of accreditation a provider can achieve. Before the ACCME, MedChi was accredited through the LCCME (Liaison Committee on Continuing Medical Education). MedChi's CME activities for physicians are planned and supervised by the Committee on Scientific Activities (COSA).

Through MedChi's National Accreditation with the ACCME, MedChi provides almost fifty accredited CME activities per year, either directly or jointly sponsored, serving more than 100,000 physicians, and several thousand more allied health professionals, throughout Maryland, the region, and the nation. These activities cover a broad range of clinical and scientific areas. MedChi CME activities include conferences, lectures, workshops, case presentations, and self-study.

The MedChi DCPD is also recognized by the ACCME, through the State Medical Society (SMS) Recognition System, as an accreditor of organizations within the state of Maryland and the District of Columbia. The accrediting is done through the MedChi Accredited Provider System (MAP System) under the guidance of the Continuing Medical Education Review Committee (CMERC). MedChi has been an ACCME SMS Recognized Accrediting organization since 1985.

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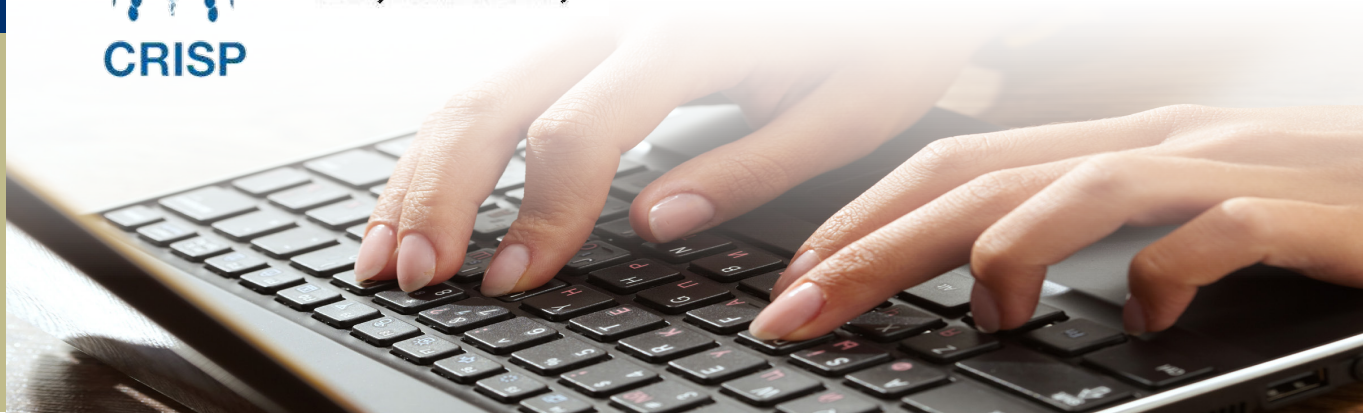

Travels in Japan

EDITOR'S CORNER

Bruce M. Smoller, MD

I just returned from a fact-finding mission to Japan. Actually, the only facts I was after involved the price of sushi (a lot) and how precise was the bullet train to Hiroshima (very). I was there as a tourist traveling from Osaka to Tokyo with stops at natural hot spring baths, beautiful sculpted gardens, and at least a hundred heated and otherwise electronic toilets that probably doubled as CT scanners. Our guide, Bill, who had been to Japan dozens of times, made the statement that each time he returned to Japan, he "restored his faith in humanity." It seemed like hyperbole at the time, and I dismissed it as over the top euphemism, geared to getting the troops in the right mood. I was wrong. Now that I am finished with the tour and back home, I understand exactly what he was saying. The Japanese people are dauntingly respectful of the person on the other side of the table, unflinchingly polite, and resoundingly civil. They carry courtesy to its limits. They say "please" and "thank you" and "have a good day" with the sincerity of the humble, even if they are important, or hold high position; or low position of no importance. Courtesy and respect are built into the Japanese DNA because they want it to be. On a smallish set of islands that are mostly mountainous, live 132,000,000 people, most of who live clustered around their large cities. Sardines have little edge on the Japanese people. It pays to be polite and respectful.

It goes further than that, however. We were told that the Japanese people, rather than have the blame for a spill or breakage fall on another, will often take the blame themselves even though the other person is clearly at fault. There are few lawsuits because blame tends not to be spread and broadcast to lite on others. No need for too many personal injury lawyers in Japan (another splendid reason to go to Japan).

It has been argued that the politeness, the bowing, the deference, and the respect are all superficial and a cover for thought and behavior that might be covetous, angry, disrespectful, or at the brink of physical. That might be so in some instances, but even if the respect is manufactured, it avoids some of those encounters that just might lead to violence, argument, and mayhem. At the very least, it avoids those nasty encounters that spiral into unintended consequences. In hockey, the bigger European rink engenders a freer skate with less incidental contact. Very often, even innocent or circumstantial contact can end in a fist-fight. Similarly, the Japanese way of doing business, with its codes of polite behavior, leads to fewer bad encounters. I think that probably this hit me harder than it normally would because of the state of discourse in our country. The polarized politics and angry discourse, finger pointing, demonstrations, riots, verbal battering, name calling, and other generally nasty intercourse of the last year (years?) contrasts vividly with the maturity of relationships and interchange among the Japanese. I am not an America "laster." Our country is, in its better moments, a really terrific place, and the Japanese, I am sure, can be testy and obscure. There is, however, a stark comparison to be made and an admission that perhaps we can learn something about human interaction. Americans are pretty good at adapting. We have always grafted the best of our immigrants and our friends onto basic American behavior, often improving both originals in the process. We can take a lesson from our Japanese friends, and graft it onto some old fashioned American know how to build a better way of relating. Who knows, but that it might lead to a better way of running our affairs. Or at least fewer cases of GERD. Either that, or we had better invent a toilet that that can have a conversation.

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Introduction

Taylor DesRosiers, MD, and Tyler Cymet, DO

Fifty years ago, physicians returned to do residency training after having been in practice, residencies were open-ended and without a clearly defined time period, and there were practically no subspecialty training programs.[1] Today, residency training has become the defining portion of a physician's medical training.[2] Medical school training and specialty training are vastly different from the way they were in the past, and the rate of change continues to increase. The days of textbooks and paternalistic Socratic teaching methods in rigorous hierarchies have been replaced with watching lectures in 2x, streaming podcasts, rounding with iPads, and performing codes on mannequins. Lecture halls with the capacity to hold hundreds are now filled with a mere handful of souls, as the rest of their classmates stream content from the comfort of their own homes.

Nearly all medical students go from undergraduate medical training into a specialty based residency program. Systems to link students to residency programs, including a common application called ERAS, an algorithm-based computer in Washington, DC, digest the multiple lists and requests of both hospitals and students, forbidding any direct discussions or agreements between trainees' and programs.[3]

Parts of the system have changed with the times, whereas others have lagged behind. Technology has brought electronic medical records, duty hour monitoring, and safety metrics into training. Other aspects of training like team-based care, inter-professional care, and health system science are still being molded to fit the old system.

This issue of *Maryland Medicine* focuses on the training pipeline of the future and the issues that need attention. In "The Politics of Debt," as well as "How Is Graduate Medical Education Funded?" Dr. William Pearce and Ms. Alicia Smith, respectively, discuss Graduate Medical Education funding and the financial debt burden that trainees shoulder. They discuss past funding streams, current debt politics, and offer suggestions as to how the system can improve. Dr. Taylor DesRosiers probes the need for a residency training in "An Education of the Future: A Debate on Physician's Training Options," a spirited debate about the pros and cons of various post-graduate training options. Do we even need to attend a residency any more? If we still must go to residency, Drs. Richard Bruno and John Corker debate whether residents should have the right to unionize in "The Unionization of Medical Residents: A Debate." Are residents hospital employees or trainees? Drs. Dana Block-Abraham and Carl Streed discuss this important question in their analysis of new ACGME work-hour requirements, "The 80-Hour Work Week: Graduate Medical Education's Friend or Foe?" Dr. Dennis Gingrich and colleagues offer a real life foray into Hershey's alternative three-year training model in "Envisioning Transformations in Medical Education." In "Current Trends In Medical Education: What Does Our Future Hold?" Drs. Douglas Phelan, Aaron George, and Travis Meyer delve into how the future of medical education could change to embrace these and other unconventional teaching models. In "The Single Graduate Medical Education Accreditation System," Alegneta Long and Stephen Shannon, MD, introduce the reader to the new single standard of residencies, combining the once separate worlds of MDs and DOs. Drs. Richard Bruno and Elizabeth Wiley discuss expanding primary care in the state of Maryland through the creation and maintenance of "Teaching Health Centers in Teaching Health Centers Are a Viable Way to Expand Primary Care in Maryland and the United States."

continued on page 12

Introduction ...

Continued from page 11

As a wrap up to the issue, Dr. Taylor DesRosiers, with the help of several physicians, and trainees presents a collection of vignettes in "The Shift: When People Become Patients." The touching stories encompass the physician's experience, from a student's first patient experience to faculty members still struggling with death. MedChi president Dr. Brooke Buckley shares her insights on GME and burnout, and Gene Ransom discusses MedChi's work with continuing education. We are happy that Dr. Bart Gershen has produced a new Word Rounds to stimulate our thought. As a longtime leader and thinker of *Maryland Medicine*, Bart has a unique perspective on healthcare today, and the talent to discuss the issues with a deep respect for the language.

Resident physicians have been an iconic part of American medicine. The caricature of the overworked and overwhelmed trainee who is responsible for everything in the hospital from Wi-Fi and food service to patient evaluation and treatment is one that will continue. The reality of the life of a trainee will not stay the same. Changes have come from new information and thinking about education, and from the government intervening when it felt that residency education could be done better, more humanely, and more safely. We will see if those changes will be permanent or a passing fad. One thing is clear: There are more good questions about how to best train the next generation of healthcare providers than there are good clear answers to the questions.

We hope you enjoy the issue, and we encourage you to share the questions that the articles generate.

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The Politics of Debt

William Pearce, MD, and Alicia L. Smith, MSII

A popular theme unfolding in the 2016 race for the White House is the cost of education. Medical professions have been disproportionally affected by the rising cost of education, and it is no secret that medical school is expensive. The Cost of Attendance (COA) has soared over the past decade, and with it medical student debt. Physicians have historically had a loan default rate of less than 1 percent, but a tipping point in the financial burdens placed on young physicians may be near. According to the Association of American Medical Colleges (AAMC), between 1992 and 2012, the median educational debt of medical students more than tripled from $50 thousand to almost $170 thousand.[1] Three years later, in 2015, the average medical student graduated with more than $180 thousand in student debt. The median COA for medical school is now more than $230 thousand and $300 thousand, respectively, at public and private institutions.

Compounding the crisis is the paucity of loan options available to medical students. Despite record low interest rates and a trivial rate of default, medical students must pay a minimum of 5.84 percent interest on unsubsidized loans, while most have to take more expensive federal loans that charge 6.84 percent interest. More than ever, with the Higher Education Act (HEA) due for reauthorization, medical students face a future of financial uncertainty.

The high debt burden for medical students has important and unique characteristics. For example, the number of students with high debt has far outpaced the general rate of inflation, rising above 65 percent during the past decade. Also of note, this indebtedness is an extremely polar number, with less than one-third of medical students carrying little or no debt. However, 45 percent of students carry more than $200 thousand in debt.[2] While physicians have traditionally been able to handle their educational burdens, the system now teeters on a fulcrum that could affect access to care for patients around the country.

Already, the debt obligations of young physicians are affecting access to quality healthcare. The shortage of primary care physicians could reach more than 31,000 physicians by 2025,[3] and this will continue to seriously harm first-line access to care as the population ages and grows. Additionally, students who enter medical school hoping to practice pediatrics or family care are often persuaded to pursue other specialties in the hope of paying off their debt in a timelier manner. [4]

The high COA of medical school engenders the single greatest deterrent to underrepresented students wishing to become physicians, a factor that is especially important in states with prevalent and growing Latino and African American populations. Latinos and African Americans, along with Native Americans, make up only 9 percent of practicing physicians, although those physicians are more likely to work in underserved areas and primary care.[5] Studies have shown that patients often feel more comfortable with a physician of their own ethnicity, which can also lead to more successful clinical outcomes. Despite aggressive recruitment, medical schools are consistently unable to enroll enough underrepresented students to meet the needs of their communities.

Although medical students have traditionally been able to repay their massive debt burdens, these burdens extend beyond the current pace of practice. The National Association of Home Builders

recently wrote that student debt has become a substantial strain on the first-time home buyer market. It is unreasonable to expect the average medical graduate with nearly $200 thousand in debt to take on a "second mortgage," much less think about starting a small business. The Consumer Financial Protection Bureau identifies student debt as a serious barrier for any medical entrepreneur. Instead of investing into a practice that could serve thousands of patients and create private sector jobs and wealth, young physicians are forced to dedicate large portions of their income to loan repayment before a small business loan can become reality. This is an encumbrance, not only on the medical profession, but also on the broader economy.

Ironically, current and proposed federal legislation will probably not improve the medical student debt picture. The Bipartisan Student Loan Certainty Act of 2013 removed the fixed 6.8 percent interest rates and created new rates that are determined by adding 3.6 percent to the ten-year treasury note rate. The new rate made it possible for medical students to borrow money at 5.84 percent interest rates in 2015. However, lower interest rates are not expected to last, so these benefits may be temporary. The Congressional Budget Office (CBO) estimates that interest rates will soar to more than 8.5 percent by 2017. The law does nothing to help students with hundreds of thousands of dollars in debt locked in at 6.8 percent or the students who will face 8.5 percent or higher rates in the future.

Meanwhile, another CBO report quietly estimates that the new law will bring in an additional $715 million in profit over eleven years, with the federal government clearing approximately $175 billion in profit on student loans over the next decade.

Today, the Higher Education Act (HEA) Reauthorization brings other loan issues to the table. Current legislative proposals include consolidation of loan repayment programs, capping lifetime federal loan allowances, capping loan forgiveness, simplifying the loan process, and removing administrative barriers throughout the federal loan process. It is unclear how these proposals will shape HEA Reauthorization in the upcoming year, or how they will impact medical students. The proposals may have potential benefits, but more important, they may or may not lead to unintended consequences.

One important consideration is a proposed cap to Public Service Loan Forgiveness (PSLF), which offers full loan forgiveness for employees of not-for-profit organizations after approximately ten years. This program is important in ensuring access to care for patients in underserved areas and community or state-run clinics. However, the President's Budget proposed to cap PSLF at $57,500, a figure that is less than the median one-year COA at a public medical school. For the 40 percent of medical students hoping to enter public service and planning to use loan forgiveness programs to offset high debt burdens, the future of these programs may be in jeopardy. The higher cost of graduate repayment benefits, like PSLF, is supported by higher interest rates and unsubsidized loans, suggesting that any reduction in benefits should correspond with a parallel reduction in interest rates. Student debt remains a point of contention in Congress. Many on both sides of the aisle believe that the debt profit is beneficial to the nation and that repayment benefits are too costly, while others believe the federal government should not be running a highly lucrative monopoly on the backs of its students.

To find viable solutions to the student debt problem, there must be a comprehensive approach that examines not only interest rates, but also refinancing options, new repayment models, and loan forgiveness programs. As long as the current Congress and President continue to ignore the growing debt contagion and physician shortage, there is serious damage being done to both the medical profession and the millions of patients across the country who will continue to be placed at risk.

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An Education of the Future:

A Debate on Physicians' Training Options

Taylor DesRosiers, MD, and Naftali Tzimet, DO

As the options available to medical trainees expand, so do the techniques, goals, and pathways to physicianhood. This piece juxtaposes two hypothetical training pipelines available to an eager new graduate of medical school. The traditional pathway of residency shows both its strengths and weaknesses when compared to the various new shorter pathways of yet-to-be-tested boot camp and certificate programs.

Taylor,

Good luck entering the world of graduate medical education (GME)! Do you really want to do a residency? You are a bright and talented new graduate. Why not take a new path? You could consider a job as an assistant physician now, which would allow you the chance to change the focus of your professional life somewhere down the road.[1] Or you could work directly in obstetrics, surgery, medicine or ER with just eight to twelve weeks of intensive training, instead of becoming fully differentiated as a board certified physician in one specialty for the remainder of your career. The concept being advanced by the NPs and PAs is a boot camp mentality. The training is intensive, deep, and focused on the specific activity you will be doing. It is like accreditation but more focused and more technical.[2] Completing a full residency will make you super qualified and over trained for what you will be asked to do. While it is fulfilling to be on top of the topic you are working on, where is the cost–benefit ratio? And if your training can be suited for the hospital, region, and procedure you will be doing, then why not fit into the process with the exact gear shape desired?

Dr. T

Dr. T,

I'm not sure I feel comfortable taking on the responsibility of patient care without the intensive training included in residency and subsequent board certification. While I've learned a great deal in school, I feel as if I've only just begun to grow the skills necessary to properly care for patients. Isn't the aim of becoming a physician to have the depth of knowledge to care for your patients at the highest level? I believe the goals of full residency training are twofold.

First, to prepare us to be the leader of the team. If we abdicate knowledge and training, we relinquish that leadership. Second, physicians are where the buck stops when it comes to medical decision-making. When RNs, NPs, and PAs are unsure or have questions, they rely on physicians to know the right course of action. I worry that boot camp won't prepare me for the understanding necessary for that role.

Taylor

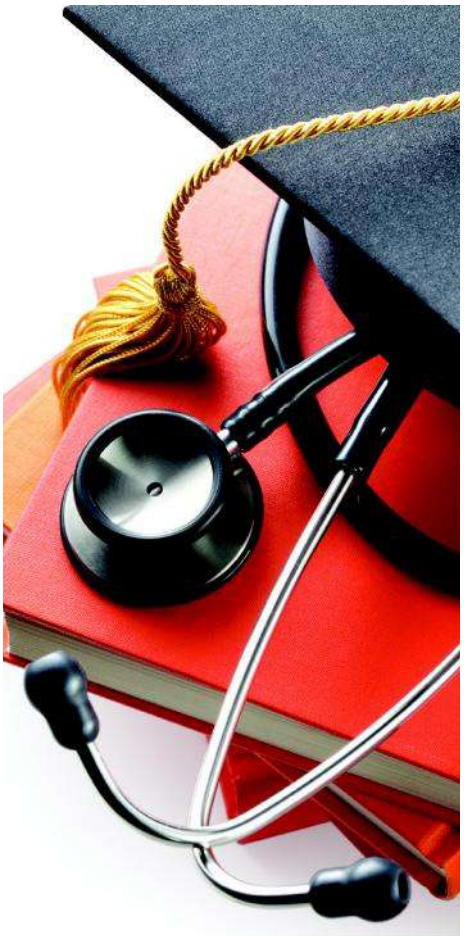
Taylor,

Your third and fourth years had the core clinical rotations to make you a physician. If you need help, you call. And hopefully your experience gave you the self-awareness to know what you can handle and when to call for help. Residency is starting to be seen as a hospital monopoly on credentialing that isn't necessary. Medicare no longer requires that physicians be in a hospital to run a hospital. So do you really need a full residency to be in charge? How about business school or leadership training that you do online while in a position? How far could that get you as a leader, on top of the boot camp mentality?

Dr. T

Dr. T,

You refer to a business-type leadership. I instead contend that physicians are team leaders in a deeper sense, carrying the responsibility for others lives on their shoulders in a way other team members do not. The way you speak of leadership implies we all need special titles and arbitrary training behind our position. You also mention online training; can you learn to care for a patient through a computer screen? Can you hold a dying woman's hands, comforting her in her last breaths on this planet? Can you stand tall and deliver the news to her family confidently, knowing you did everything within your power to save her life? This is what I hope to accomplish through my residency training. I worry that a truncated education will compromise what it means to be a physician. Take, for example, someone having a heart attack on an airplane. How would it feel to admit you are a physician



but have no idea how to help that person with your limited scope of training? You can't simply make a call to someone who knows more in such a situation. The public would begin to question not only you and your limited training, but also all physicians. And the integrity of our career choice could foreseeably crumble.

Taylor

Taylor,

Graduate medical education is going to be different in twenty years. We may know that a diabetic in renal failure would have a much better life if he or she had a kidney transplant. Determining the resulting cost–benefit decision tree is a level above us, and the responsibility has moved to administrators in this regard. When it takes a team to deliver care, each team member has a limited amount of responsibility. The title "Doctor," which we have shared with

other fields, used to mean that someone had mastered the knowledge of the day on a topic area, and earned the ability to push the boundaries of that knowledge through research, writing, or, for a physician, through medical practice. Now we have Doctors of Practice, or just plain Doctor, titles that don't imply the same academic level. Residency takes a physician much deeper into a field of study. The value of that depth is only real if it comes with increased decision making ability, oversight of resources, or another expression or appreciation of those skills. If it is only other physicians who respect the credentials and the depth, then the credentials become arbitrary to those administrators controlling the resources. The best training may be in-person, but as we blend online and in-person there will be a sweet spot. More than 120 nurse practitioner schools are fully online, and students receive the same credentials as those who train in person. Without a financial benefit, role preservation, or other advantage to doing the full and deep training, figuring out the time-cost ratio is worth considering. Doing something to be the best is admirable. I just question the societal value.

Dr. T

Dr. T,

The ACGME (Accreditation Council for Graduate Medical Education) milestones-based approach aims to have each resident graduate at a high and consistent level of knowledge and skill, able to care for the broad spectrum of patients under the specialty's umbrella. A specialized surgeon has to care for a patient's other medical concerns as well, and must understand how those non-surgical issues intricately intertwine with his or her surgical presentation. The relationship goes both ways, as each patient also invests a significant level of trust and confidence into his or her physician. If we fragment care and do not offer continuity, patients will be less likely to be satisfied, adhere to their care regiments, and costs will grow in our system in pace with further fragmentation.[3] Creating silos around yourself and your ability to care holistically for a patient with boot camp or certificate training only may be akin to putting blinders on, and lead to fragmentation of care. Part of residency training is rotating through other services, providing each trainee with a myriad of experiences in the hospital or care system to understand the delivery of care from start to finish. The entire process is essential. Caring for patients' various maladies is interconnected, just as every system in the body relies on others to function properly. You have given me much to ponder in my decision toward completing training as an individual physician. Thank you. I look forward to seeing where the future of graduate medical education takes us!

Taylor

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How Is Graduate Medical Education Funded, and How Will That Change?

Alicia Smith, MSII, John R. Corker, MD, and Dana Block-Abraham, DO

Graduate medical education (GME) refers to the formal apprenticeship training following the receipt of an MD or DO degree before independent medical practice, more commonly known as residency or fellowship training. Training can last anywhere from three years for primary care to more than ten years for specific specialties. Although training has evolved to include the use of electronic health records, telemedicine, and other twenty-first century innovations, residents and fellows are paid through a funding mechanism established in 1965. This funding mechanism has received minimal reform to stay relevant to new training and care delivery paradigms.[1]

The bulk of GME funding, about $15 billion per year, is primarily derived from Medicare through two streams: Direct Graduate Medical Education (DGME) and Indirect Medical Education (IME). DGME payments are meant to cover direct training costs, such as salary, benefits, and administrative expenses. IME is provided to cover the additional costs thought to be associated with sponsoring teaching programs and providing patient care in training centers.[2] While government entities pay more than $15 billion annually for GME programs, the cost to maintain these teaching programs was $27 billion in 2002.[3] This increasing difference is reconciled through funding from states, communities, training centers, and private payers.

The Need for Reform

The half-century-old GME funding mechanism makes expansion difficult, despite growing needs, by placing funding limitations on existing GME programs' growth. New programs at GME-naive hospitals have the ability to tap into federal dollars, but creating a new residency program is a resource intensive process and existing programs cannot access additional dollars. The limitations have created a bottleneck in the training pathway, as medical school enrollment has increased by more than 25 percent since 2002 without a parallel growth in residency slots.[4] Additionally, many international medical graduates (IMGs) also hope to train in the United States, adding to those vying for post-graduate training. Without additional upsurges in the number of positions available for residency training, medical students will be left without the ability to practice as physicians.

Current GME Expansion Initiatives

Various stakeholders have taken steps to reform GME. The following selection offers an example of current success and future proposals.

Federal Initiatives

- The Primary Care Residency Expansion (PCRE) program, created in 2010 from more than $167 million in appropriations from the U.S. Department of Health and Human Services, provided grants to allow for the creation of more than 504 primary care positions.
- The Teaching Health Center GME program was created by the Affordable Care Act of 2010 as a $230 million, five-year initiative to increase the number of primary care residents and dentists trained in community-based settings. The Medicare and CHIP Reauthorization Act of 2015 reauthorized the program to provide $60 million in funding per year for 2016 and 2017 to support residency training in Teaching Health Centers.[5]
- The Veterans Access, Choice and Accountability Act of 2014 increas-

es the number of VA-funded GME positions by 1,500 over five years. The law requires that these new positions are within ACGME or AOA accredited programs that meet these requirements: primary care or mental health, critical access needs, and new or limited GME programs. Recently, the VA approved more than 200 of these residency positions, and plans to add an additional 200 to 325 positions per year from 2016 to 2019.[6]

All-Payer — Maryland

"All-payer models" bring together all relevant payers and stakeholders to contribute to GME funding. The all-payer model creates an opportunity for communities, states, and private parties to increase GME funding through their joint contributions. The Maryland Health Services Cost Review Commission (HSCRC) regulates hospital payer rates, including those for Medicare. GME payments are built into the rate for hospital services, and hospitals are required to charge public and private payers these rates, ensuring that all payers contribute equally to GME funding. However, Maryland's HSCRC does not control how hospitals spend GME payments, and, "in the recent past, no hospital has approached the HSCRC to request funding for new residency programs or positions and no additional funding for GME has been provided."[7]

Third-Party — Kaiser Permanente

California's Kaiser Permanente has created an entire medical education pipeline, from its newly proposed medical school to the practicing physicians in Kaiser hospitals. To fund positions beyond those covered by federal dollars, Kaiser contributes a percentage of its insurance revenue to a community pool. One of the oldest residency programs in the United States, Kaiser employs approximately 50 percent of their GME graduates.[8]

GME "Trust Fund"

Much like Kaiser Permanente, various states have created appropriations pathways into "Trust Funds" to be used for GME expansion. California passed a bill in 2015 that created the Graduate Medical Education Trust Fund. This fund can receive contributions from private sources to provide grants to residency programs in areas with the greatest need, but the residents must be graduates of California medical schools. Indiana passed a bill in 2015 to create a medical residency education fund and a graduate medical education board, which are tasked with funding residency program expansion and creation. The funds are allotted in grants, and the receiving entities must match at least 25 percent of the funding they receive. Another variation stems from Georgia, which created a program in 2013 that offers dollar-for-dollar fund matching for hospitals to start residency programs with some focus on primary care specialties and general surgery, and the development of residencies in geographically underserved parts of the state. This funding is offered for the creation of new programs, and the state no longer supports the hospitals once they begin receiving Medicare GME funding.

Governance Boards and Consortia

Various states and institutions have formed governance boards or consortia to manage GME. Such bodies have been supported by COGME (Council on Graduate Medical Education), and a few examples include the GME Consortium between Barnes-Jewish Hospital, St. Louis Children's Hospital, and Washington University School of Medicine, and the Utah Medical Education Council. The goal of this organizational structure is to increase coordination and allocation of funds and resources, as well as residency positions, to meet the needs of the community. The boards also often play a role in performance and program assessments to ensure quality education.

The Future of GME

Graduate medical education is, and will remain, a necessity for properly training future physicians. There are significant limitations to the funding structures that currently exist to support residency training, and several stakeholders are working to develop new, sustainable funding models. Congress, states, hospitals, physicians, and other third parties will need to continue assessing and addressing the GME funding environment to assure patient access to high-quality care provided by properly trained physicians.

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The 80-Hour Work Week:

Graduate Medical Education's Friend or Foe?

Dana Block-Abraham, DO, and Carl G. Streed, Jr., MD

In medicine, the term resident reflects the amount of time a recent medical graduate historically spent in the hospital during the years of post-graduate training. New physicians would routinely spend more than 100 hours per week at the hospital, essentially "residing" there.

A series of events, including a high-profile case in New York and passage of a bill in the House of Representatives ("The Patient and Physician Safety Act" of 2001), ultimately led to the Accreditation Council for Graduate Medical Education (ACGME) limiting ACGME-accredited programs' work hours to eighty hours per week beginning in 2003.[1] In 2008, the Institute of Medicine (IOM) published a report on resident duty hours and patient safety[2] that influenced the implementation of additional restrictions on resident work hour rules by the ACGME in 2011.

Since the changes were made, several questions have been raised. This article aims to briefly summarize, citing medical literature, available answers to the following questions.

Are Improved Patient Outcomes Associated With Reduced Duty Hours?

Improving patient safety was one of the main catalysts of duty hour reform. Up to now, studies investigating patient outcomes have primarily demonstrated no overall difference pre and post-duty hour restrictions, or have shown statistically but not clinically significant improvements in patient morbidity and mortality.[3,4] Bilimoria and colleagues very recently reported results of a national trial that compared 117 general surgery residency programs, randomized either to strictly follow current ACGME duty hour regulations or to a more lenient schedule that capped at eighty hours per week.[5] More than 130,000 patients were cared for by 4,330 residents in these surgical programs in one academic year (2014–2015), and there was no reported difference in patient mortality, severe postoperative morbidity, or other postoperative complications between the programs that strictly adhered to the ACGME standards and those that allowed longer shift durations and less time between resident shifts.[5] There is a lack of similar studies for the non-surgical disciplines. However, an increase in patient hand-offs has resulted from the schedule requirements incited by ACGME duty hours restrictions,[2] and some argue that this increase in hand-offs alone may be detrimental to patient safety, continuity of care, and resident learning.

Has the Workforce Changed? If So, At What Cost?

Quantitative data show that there has not been a significant change in the number of hours worked by faculty physicians since 2003.[1] However, attending physicians surveyed have expressed dissatisfaction with patient care, resident education, time for teaching, and their overall workload after ACGME duty hour restrictions were established.[1,6] Attending physician workloads are not the only ones to have increased; more mid-level providers are being used to fill schedule gaps created by duty hour limitations in academic medical centers.[7,8] A study in 2009 calculated that 1.2 mid-level providers were employed per graduating general surgery chief resident at that time, and predicted that the number would increase to 1.8 per graduating chief resident by 2012.[8] In anesthesiology training programs, certified registered nurse anesthetists (CRNAs) are often hired to fill the gaps in anesthesiology resident coverage. A study by Backeris and colleagues estimated an average cost of $373,400 to $931,001 (depending on local CRNA pay rates) per anesthesiology resident over the three-year residency period when CRNAs were used in this manner.[9] The implications of increasing attending responsibility for direct patient care and of hiring physician extenders to bridge resident coverage gaps are financially, socially, and politically complex.

Has Resident Quality of Life Improved Since the Implementation of Duty Hour Restrictions?

For surgical and non-surgical specialties, resident perceptions of their quality of life and work-rest balance have generally improved since the changes in duty hours were implemented.[1,10,11] In the recent randomized trial comparing strict and less strict adherence to ACGME guidelines by general surgery programs, however, there was no difference in subjective resident well-being between the two cohorts.[5] The data are particularly interesting to interpret when recognized by the IOM and reported in several surveys that residents are not completely accurate or honest when reporting the numbers of hours they work, likely because their programs can face disciplinary action and loss of accreditation for violations of the duty hour restrictions.[2, 11]

What Effect Has the 80-Hour Work Week Had on Resident Training and Experience?

The answer to this question seems to be program-dependent. A variety of markers—including absolute case numbers, case categories (e.g., trauma, vascular, abdominal, major v. minor), resident and attending physician survey opinions about the resident surgical experience, as well as examination performance—have been studied. The literature is inconsistent; some studies report decreased case numbers or a lack of case diversity for general surgery residents following implementation of the 80-hour work week in 2003.[1,12,13,14] Other studies suggest that the summative resident surgical experience has not been adversely affected by duty hour restrictions.[1,15] The additional 2011 ACGME duty hour change, limiting the duration of intern shifts to a maximum of sixteen hours, has significantly decreased surgical intern exposure to several different categories of cases.[16] The data must be interpreted with caution, however, because it is also known that residents may misrepresent their role in surgical cases to meet required case numbers for residency graduation.[17] Additionally, there has been no significant difference in surgical resident examination performance since the 2011 ACGME guidelines. Most publications agree that continuity of care provided by residents is suffering, perhaps as a result of the creative schedule manipulation that occurs to ensure adherence to ACGME duty hour restrictions. [6,18,19] Concerns over the adequacy of resident education since 2003 have raised questions about extending the duration of residency training programs or potentially developing focused tracks within specialties to streamline clinical experience.

Does the Current State of Graduate Medical Education Need to Change?

Changes in resident schedules and the associated time limitations on dedicated resident clinical learning experiences have led to the development of alternative methods of resident education to ensure adequate skill acquisition for today's residents. Sophisticated medical and surgical simulations have been created to supplement medical student and resident education.[20] The ACGME has also introduced the concept of a competency-based system, as opposed to a standardized time-based system, to assess resident proficiency.[20] Such an approach to resident education is novel, and tracks with real-world promotion: individual residents have unique learning curves, and one second-year surgical resident may have advanced skills in a certain area that another resident of the same postgraduate year struggles to master.

As further adaptations are made to graduate medical education in the coming years, it is our duty as a profession to ensure that patient safety and outcomes, resident competency and quality of life, and rates of medical student entrance into, and resident attrition from, various specialties are properly studied and reported. As modifications are made, it also will be imperative to evaluate the difference between the cost of training residents and the cost of shifting more work to attending physicians and mid-level providers, and to consider the social and political implications of these changes. Graduate medical education will remain essential for the development of qualified, competent physicians for future generations, and changes made to the current system should be as evidence-based as possible to provide for continued success in training the most competent and resilient physicians and surgeons.

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Envisioning Transformations in Medical Education

Dennis Gingrich, MD, Shou Ling Leong, MD, Britta Thompson, PhD, MS, and James Kent, MSII

Medical education is being transformed nationally as a large number of colleges of medicine are currently engaged in substantial curricular changes. This period of sweeping reexamination and change is arguably the greatest since those changes accompanying the Flexner Report in 1910. Some of the ongoing and anticipated changes force us to reexamine basic premises of medical education. Two of these are (1) reducing the length of medical school education from four to three years for selected students, and (2) shifting medical school educational focus and assessment to a competency-based model. These two landmark changes will be discussed in this article.

Although the traditional two-year didactic and two-year clinical educational pattern has been remarkably stable since its adoption after the Flexner Report,[1] three-year medical school education is not a new concept. In the 1970s, 25 percent of U.S. medical schools offered three-year programs linked to residency training.[2] Because of rising student debt and a renewed interest in individualized education spurred by the Carnegie Report of 2010,[3] there is greater interest in the three-year model. In fact, a 2014 survey of medical school deans revealed that 35 percent of schools are considering the development of such a program.[4] A recent point-counterpoint article in the *New England Journal of Medicine* describes opposing views on accelerated three-year programs. [5,6]

A substantial portion of the dialogue has focused on the purpose and value of the fourth year of educational training. Arguments to continue the existing pattern range from the tradition of the past century to the need for appropriate educational training. Primary goals for the fourth year of medical school include enhancing clinical skills in preparation for residency, providing experiences that allow career exploration, and permitting student exposure to unique fields or experiences that might be difficult to coordinate in the future. The argument for maintaining these opportunities is that the fourth year is an essential part of all students' educational experience. The argument against is that one of our newly evolving educational goals is individualization of the educational experience. It follows that the choice of fourth year or equivalent, as long as requirements are met, should be the student's choice rather than an institutional mandate. Selected motivated students with a high level of clinical experience and a clear career direction might choose to forgo the traditional fourth year if other options, such as early residency entry, were available.

One example of a new three-year program is at Penn State Hershey and was launched in 2015. The program links three years of accelerated medical education with transition into the three-year family medicine residency. The program's goals are to build the primary care physician workforce, to better align medical training with the healthcare needs of the nation, and to develop a competency-based education that supports individualized learning. Longitudinal integrated clerkships for clinical core training, during which time students will be completing clerkships simultaneously rather than in block format, are offered. Students also follow their own panels of patients, creating opportunities to develop meaningful relationships with patients and faculty. Data suggest that these longitudinal experiences foster patient-centeredness and mitigate the erosion of

student empathy.[7] The link with residency allows integration of undergraduate and graduate medical education (GME), forming a six-year continuum across the learning environment.

How are these existing and proposed changes impacting students? The following is the position of a medical student who is involved in a three-year medical school program:

"From my point of view, it is important to stress that a three year program is not a 'shortcut' to finishing medical school; all the requirements for the traditional fourth year curriculum are being met. It is not merely about saving money, though that is one of the incentives offered. It is not about foregoing extra learning in favor of earlier advancement to residency. What it does allow is earlier-than-early exposure to clinical education and a 'big picture' perspective on 'why we are really here' that can get lost in the conventional two first years. This type of program is not simply about a shorter education, but a better education. I have no doubt that I am receiving training superior to that of my four-year colleagues, and early results are starting to display that. There's no wasted time, there's early exposure, and there's a steep learning curve that allows for an integrated and multimodal educational process."

The past decade has also seen a paradigm shift in medical education from a focus on fixed length and variable learner outcomes to variable length and fixed outcomes, from knowledge acquisition to knowledge application, from norm-referenced to criterion-referenced and from summative assessment to multiple formative assessments[8] and an increasing emphasis on assessment of learner processes in addition to outcomes.[9] With this new emphasis has come a focus on competencies, milestones, and entrustable professional activities (EPAs).

Competency-based education focuses on outcomes rather than structure and process.[10] Using the competency-based framework, learner abilities are defined, and learners provide evidence that they possess those abilities consistently and across various situations and contexts. The shift has required medical training programs to define the expected competencies of learners and create valid assessments. Competencies for the practicing physician have been identified.[11]

Milestones help to define guideposts to achieve the competencies.[10] Milestones are learner abilities that can be observed and assessed and are criterion referenced (learners are measured against a set of standards) rather than norm-based (learners are measured compared to other learners). Milestones indicate a graduation target (or a guidepost).

EPAs help to operationalize medical education outcomes that the medical profession entrusts a practitioner to perform.[12] Each EPA is a synthesis of several competency domains. As indicated by Olle ten Cate, MD, "entrustment decisions have a clear purpose, which is to confirm not only the ability, but also the right and the duty, for a trainee to act."[13] The Association of American Medical Colleges (AAMC) has recently created a set of thirteen entrustable professional activities expected of entering residents.[14]

American residency programs have transitioned to competency-based education, but this transition is only beginning for medical schools. The rationale for competency-based education, of course, is that it permits the identification of specific skill sets and the assessment of progress in these skill sets for every resident, and accommodates variations to achieve a more individualized educational experience.

Emerging medical education reforms designed to meet the needs of society as well as our learners have led to the development of innovative accelerated programs. While only a few medical schools currently have an accelerated pathway program in place, many more are developing or considering such a program. Although accelerated programs create new opportunities, they raise serious questions and introduce challenges that must be addressed.

Likewise, competency-based education is a unique development that provides a method of individualizing education, emphasizing the development of essential skill sets, and realistically assessing skill sets. It also provides integration and continuity with the method and structure of education.

Innovative medical education in the United States started with the Flexner Report, more than a century ago, and continues today. The challenge of how to practice effectively in the future will require physicians with well-developed skill sets that allow them to handle complexity effectively, humanely, and with versatility. It is time to develop pathways of learning that reflect this innovation and that will provide the necessary training that our future society will require.

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Current Trends In Medical Education: What Does Our Future Hold?

Douglas Phelan, DO, Aaron George, DO, and Travis E. Meyer, MD

Graduate medical education (GME) continues to rapidly evolve. Proposed solutions are largely reflections of past trajectories or latent problems. We are witnessing trends that are often responsive to short-term issues, but miss new challenges on the horizon. Our aim is to offer perspectives and discuss implications from three emerging trends as they may develop over the coming decade. Changes will affect undergraduate medical education (UME) and GME spheres and are contained within three large categories: (1) How content is delivered and achievement assessed, (2) What new categories of skills will be needed by future physicians, and (3) The relationship between the learner and the institution.

Content and Achievement

The delivery of content and assessment of achievement is shifting in medical education. The current model assumes every student enters with roughly the same knowledge. It also assumes that students will move through medical school as a standardized cohort, graduating with acceptable differences in mastery as reflected by grades, class rank, and test scores. Content delivery, however, is rapidly shifting from lecture hall note-taking to online, ever-accessible content, with augmented reality (AR) and virtual reality (VR) revolutionizing the very format and substance of the content.

Assessment is also evolving. The recent developments of mastery learning and other competency-based assessment tools are transforming medical education from a system rooted in duration of training to one based on competency assessment. The core tenets are (1) educational excellence is expected and can be achieved by all learners, and (2) little or no variation in measured outcomes will be seen among learners in a mastery environment. Under the system, the learner is measured against a minimum standard; all physicians are expected to be above that standard to graduate.[1] The Milestones framework, set forth by the Accreditation Council for Graduate Medical Education (ACGME), represents the beginnings of this competency-based movement.

Testing at the outset allows each student to establish a baseline level from which to progress toward mastery, which is the same standard for all learners. As length of training moves beyond a period of time dictated a priori to one determined by the student, variable education might develop. Temporal shifts in the medical curriculum already exist, leading to extended stays for the completion of other advanced degrees (e.g., PhD, MBA) or research. Discussion already exists regarding the appropriateness of shortening medical education and how one would accomplish the task.

Creating variance in duration of training based on mastery could lead to avoidance of the opportunity cost in missed income for future physicians. More months in school translates to fewer months earning wages, with increased debt accrual as education loan repayment is delayed. Much like a commodity market, the "invisible hand" guides the learner to the quickest path ahead—drawing him or her to goal achievement, personal satisfaction, and fiscal prospects. The academic institution in the mastery-learning framework has every incentive to provide the student with the resources to succeed in the shortest time possible. If medical school financing follows established changes in healthcare delivery, from a fee-for-semester schema to a pay-for-product/quality schema (much as DRGs and MACRA, respectively, have done for inpatient admissions), then once a student achieves mastery level, another student (and another flat rate tuition) can enter. Length of training may supplant class rank or grade in how prospective employers evaluate one candidate or another.

At the residency level, the Milestones system currently creates outcome-based benchmarks for trainees within the pre-defined specialty-specific six core competencies of the ACGME. There is already an observable floor, and ceiling, to this spectrum—and enough data to show individual programs where their graduates are tending to enter and graduate. With regard to the mastery learning movement, we do anticipate that given the development of a tool to measure proficiency, the system will generate a new pathway of training.

There are potential drawbacks to this projected path. The future effects on student and resident comradery and the social interaction between classmates cannot be predicted, perhaps distorting the fundamental notion of a "class" of students. Moving away from a set of shared experiences by a group of peers could possibly impact the very fabric of the profession. Logistically, as the timeline of training is disrupted, traditional waypoints, such as the National Resident Matching Program, will have to be retooled.

The Broader Skill Set of the Modern Physician

A common lament of the practicing physician is increasing involvement of non-medical personnel in decisions that impact patient care. Data from the Department of Labor Statistics show that from 1970 to 2009, the number of administrators in healthcare rose by more than 3,000 percent, while the number of physicians increased by less than 500 percent.[2] Yet, when studied, hospitals and systems led by CEOs with medical degrees outperformed their non-physician counterparts.[3]

In response, as of 2014, nearly half of all medical schools offer a joint MD/MBA program, with many schools offering seminars on business and policy. Professional organizations, such as the American Medical Association (AMA), and specialty societies have moved to fill the gap, offering programming to advance leadership skills. Such programs may not be sufficient to reverse the trend of non-physician administration, and supplementing already saturated curricula may be difficult.

Physicians will increasingly need to develop non-clinical skillsets beyond those of administrative and financial roles, particularly as the medical community accepts value-based care and increasingly focuses on metrics in both clinical and non-clinical processes. The increased focus on population health measures and patient satisfaction will shift the role and responsibility of physicians toward evaluating and ensuring the quality of care provided. For many specialties, it is now widely required that a quality initiative is completed to satisfy Maintenance of Certification (MOC). It is likely that medical students will soon need mastery level knowledge of improvement schema, such as Plan-Do-Study-Act (PDSA) or Six-Sigma,

as well as a more robust understanding of statistical modeling beyond the evaluation of scientific literature. Although the C-Suite may not give up the top jobs to physicians in droves, physicians are likely to be pulled from the exam room or operating room to design, administer, and enforce quality initiatives in the workplace.

Medical schools have yet to adopt many of the methodologies used by business schools to teach the material. Although medical education has attempted to offload some burden of didactics from faculty to more group based and student-led initiatives, such as Case-based learning (CBL) and Problem-based learning (PBL), it is far removed from the real world group project framework that is successfully integrated within prominent business schools. A shift to a team-based learning and project-rich curricula could also reflect the new form of assessment in leadership.

The depth to which our UME and GME community chooses to integrate business skills will have profound impact on the future of the medical profession. Three possible scenarios could follow: (1) physicians trained largely with respect to clinical skill for a return to the bedside and exam room, (2) doctors schooled predominantly in business and leadership for higher administration, and (3) some blend of the two. At the very least, there will be stratification that increasingly plays out between these three spaces with inevitable hierarchical issues. One must also not forget the current cadre of highly trained, non-physician health care administrators who are unlikely to yield their positions. In the blended scenario, the increasing numbers of advanced practitioners will be ever more competitive (and less expensive) than watered-down clinicians with a hint of a business background. These physicians may also lack the requisite business education to be truly effective across complex healthcare systems that operate like large corporations. Physicians would be left in the uncomfortable position between advanced practitioners and business administrators, but without the business acumen, clinical expertise, or salary to explicitly excel in either role.

The Physician–Employer Relationship

At the resident level, the relationship between student and institution is rapidly changing. There is current commoditization and commercialization of medical education, with the medical student viewed as a product consumer, mirroring a concerning change in higher education as a whole. Combined with the shift from apprentice to employee in graduate medical education, the early professional development of future physicians makes the employed model of practice seem like a natural continuation instead of an affront to independence.

In 2011, the Supreme Court decided in Mayo Foundation for Medical Education and Research, et al. v. United States that medical residents were not students and were therefore employees. While this decision focused on taxation status, its ramifications continue to unravel nearly five years later. Employees are due certain protections under multiple regulatory and governmental agencies. Medscape reports that the average PGY1 annual salary is $51,000. If a resident works eighty hours a week (the maximum currently allowed by ACGME), factoring in four weeks of vacation, then the hourly salary can be computed at $13.28. Of note, residents also do not receive overtime pay once they eclipse forty hours per week. With overtime, the calculated resident hourly rate decreases to $10.63. As further discussions about minimum wage continue in this country, the fact that a salaried professional with a doctorate degree earns less than the local minimum hourly wage (which is already legislated to increase to $15 per hour in some areas) will become a contentious issue.

Unionization will additionally complicate the paradigm of trainee as employee. One of the major shifts may be with whom these resident groups bargain for rights and protections. The work of setting these policies has historically been done by the ACGME. However, as a result of court decisions and negotiations, policies of the Department of Labor, OSHA, and parent institutions may become the more restrictive common denominator. GME will need to adapt to a body of workers regulated outside the auspices of its traditional accrediting body in the face of an increasing legally protected bargaining power of the resident-employee.

The rise in trainee empowerment is also evident at the UME level. Rising tuition costs are driving medical students to expect a product for the roughly $200 they pay for each day of medical school. Students who fail to match into residencies will likely seek retaliation against their medical schools for failing to prepare them for the GME task ahead and to produce the promised product for the price of tuition. At what point would the Department of Education revoke the ability of students of a medical school to receive federal loans because of a lack of "meaningful employment" after graduation? The AOA's COCA (Commission Osteopathic College Accreditation) recently instituted a policy that medical schools must achieve 98 percent residency placement over a three-year per period. The disintegration of the "implied contract" that once a student is admitted into medical school he or she will be shepherded through to independent practice has been exacerbated by the disconnect between the UME and GME pipeline, allowing a far greater increase in graduating medical students than PGY1 internship positions.

Ultimately, far from the often argued generational changes, we are witnessing massive institutional alterations that are transforming the medical student from the role of pupil to consumer, and the resident from the role of apprentice to employee.

Conclusion

In all, there are three core areas of change that have only just begun to reveal their impact on medical education and will fundamentally and irreversibly alter the training and development of this nation's future physicians: (1) The assessment of learned medical knowledge, (2) the increasing impetus placed on quality control metrics and business within lectured material, and (3) the new role of a medical student as a consumer and a resident as an employee.

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The Unionization of Medical Residents: A Debate

Richard Bruno, MD, MPH, and John R. Corker, MD

The debate over the unionization of medical residents has been one of the most significant disputes in graduate medical education. In this article, Drs. John R. Corker and Richard Bruno present the pros and cons of medical residents forming unions.

PRO: Unions are effective. When the pediatric residents of Jacobi Hospital in the Bronx were unsuccessful in their requests for better working conditions in 1969, they banded together and formed a collective group to air their grievances with hospital administration. After months of negotiations, the residents secured better hours and pay, and a commitment to building improvement and construction.[1] Unions are legal. Hospitals and residents have sometimes struggled to see eye-to-eye, leading some residents to organize on their own (as has been done at the University of Washington and the University of Michigan),[2] or under a national union called the Committee of Interns and Residents (CIR). In November of 1999, the National Labor Relations Board ruled that residents at both public and private hospitals are indeed employees, granting them the right to unionize legally.[3]

CON: Physicians in training have been organizing for the purpose of formal representation within their universities and hospital systems for decades. In fact, a majority of teaching hospitals currently support a democratically elected Resident Review Committee (RRC) and a Graduate Medical Education Committee (GMEC). These committees serve as media through which residents and fellows can meaningfully participate in decision making, voice concerns, and negotiate improvements on issues ranging from salary and benefits to work conditions to safety and quality to parking policy. Furthermore, many of the proposed benefits of unionization are already afforded by existing membership or representative organizations, such as the Emergency Medicine Residents Association (EMRA), the American Medical Association (AMA), and the Institute for Healthcare Improvement Open School. Ostensibly, the only two actual benefits of unionization are the right to legally binding negotiation and the right to execute labor strikes. Are these rights really worth re-creating the wheel in so many other ways?

PRO: Long hours and low wages are bad medicine. Poor wages often leave residents unable to support their families, leading many to turn to social services such as food stamps and Medicaid to feed and provide care for their partners and children. Long hours have been the subject of much debate within the medical community. As national attention is turning to young physician burnout and suicide, we have an impetus to examine solutions that may prevent adverse hospital events.

CON: It would be difficult to find a physician in training who wouldn't welcome shorter hours and larger paychecks (myself included). However, if we're being honest, the average physician trainee made $55,300 in 2014, which was greater than the median U.S. household income ($53,891) that same year.[4,5] While some physicians in training may depend on food stamps and Medicaid support, these are unfortunate exceptions, and not the rule. Physicians, in training or not, certainly deserve to be paid commensurate to the services that they provide. But what message do we send to society and the patients we serve by diverting time and resources away from their care just to avoid the same social services that put food on many of their own tables? Although work hour restrictions have already been codified without the intervention of resident unions, they don't seem to be producing the intended effect. A recent systematic review in the *Annals of Surgery* concluded: "Recent Resident Duty Hour changes are not consistently associated with improvements in resident well-being, and have negative impacts on patient outcomes and performance on certification examinations. Greater flexibility to accommodate resident training needs is required. Further erosion of training time should be considered with great caution."[6]

PRO: Unions protect and enrich both residents and patients. In addition to the legally binding salary and benefit negotiations of collective bargaining, unions can provide a process for addressing grievances while allowing resident colleague, faculty, union staff, and attorney attendance and support (something not offered by all GMECs or RRCs). A portion of resident union dues often support a patient fund to meet unmet patient care needs, such as ophthalmoscopes and neonatal bilirubin meters, helping residents take better care of their patients and improve patient safety.

CON: Residents and fellows pay membership dues to unions. The patient funds mentioned above are taken from these membership dues. Residents and fellows do not need a union to buy ophthalmoscopes, neonatal bilirubin meters, or anything else to provide better care for their patients. In fact, they could

save themselves a lot of money by skipping the rest of their union dues and just organizing an effort to buy these things themselves or through their RRCs and GMECs. Unlike other hospital employees, residents and fellows are not typically paid with hospital profits. The majority of house staff salary and benefits are funded by Medicare, which complicates a union's ability to meaningfully negotiate on their behalf.

PRO: Unions also can bring protection to residents in danger of termination, as they would receive a fair hearing with mediation. In addition to training in contract negotiation and leadership, union members participate in symposia and develop policy and programs for their institutions.

CON: RRCs, GMECs, AMA, EMRA, and so many other organizations already provide these services to house staff.

PRO: Every residency program deserves the opportunity to unionize. Giving residents a sense of input, ownership, and effectiveness in their own experience is an important mediator of burnout, since one can become hopeless in situations that seem beyond one's control. Unionizing may be an option for residents who feel that their voice is not being heard at GMEC and RRC meetings, and who struggle with administrations who value maximizing productivity over safety and a culture of care. According to Fitzhugh Mullan, MD, co-director of the George Washington University Health Workforce Institute, resident unions provide a new and progressive focus for younger physicians bent on changing and improving the role of the medical profession in America.[1] Resident unions also provide an opportunity to engage in professional development, allowing residents to hone their leadership and organizing skills. Editor-in-chief of *Academic Medicine*, David Sklar, MD, argues that if resident unions can help to create a more equitable, effective institution through the engagement of residents in process improvements and enhanced clinical quality, then it may ultimately create a more professional environment and thereby enhance professionalism.[7]

CON: In the end, the only unique rights afforded to physicians in training by unions are those to legally binding negotiation and to strike. Why ask house staff to spend their limited, hard-earned salaries on union dues to recreate the wheel in so many ways? Physicians take an oath upon graduating medical school to first, do no harm. A labor strike involving any significant portion of vital house staff (and make no mistake, residents and fellows are vital to their patients' care teams) would be catastrophic for patient care. Moreover, it would represent a devastating public relations gaffe for a profession that is becoming more fallible and dispensable in the public eye with each passing day. As physicians' assistants, nurse practitioners, and Dr. Google continue to expand the scope of their practices, physicians—both in practice and in training—need to solidify the public's trust in their expert, benevolent care. A labor strike would do irreparable damage to this trust.

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Teaching Health Centers Are a Viable Way to Expand Primary Care in Maryland and the United States

Elizabeth Wiley, MD, JD, MPH, and Richard Bruno, MD, MPH

With an estimated shortage of more than 1,000 primary care physicians in Maryland by 2030[1] and 12,000 to 31,000 primary care physicians nationally by 2025,[2] it is critical that graduate medical education train a more robust primary care workforce aligned with our nation's health care needs. An emerging evidence-based strategy to address the primary care shortage is the expansion of teaching health centers (THCs). THCs seek to train primary care residents in the setting in which they are likely to practice; the fundamental premise being that such training will better prepare residents for practice and may increase the likelihood of residents opting to remain in high-priority shortage areas post-residency. In fact, initial data from THC programs show that nearly twice as many graduates (33 percent versus 18 percent from non-THC family medicine residencies) are planning to continue to work with underserved populations.[3]

Teaching health centers were initially federally funded as part of the Patient Protection and Affordable Care Act (ACA). Under Sec. 5508 of the ACA, $230 million was available to support THCs over five years. THCs are currently training nearly 700 residents in 60 programs in 27 states plus the District of Columbia. While many THCs are located in federally qualified health centers (FQHCs), there is substantial diversity in training locations, including community mental health centers, rural health clinics, and Indian Health Service sites, among others.

When initially conceptualized, teaching health centers were to be funded by Medicare GME funding. However, given the political climate, THCGME funding was modeled after Children's Hospital GME (CHGME). In an effort to more closely align GME financing with the nation's physician workforce needs, the fundamental premise of THCGME financing was to promote and enable funding to support innovative training opportunities in the community, to allow funding to "follow the resident," rather than exclusively flow to or through academic medical centers.

Following the Affordable Care Act, THCGME funding has been in peril. The Medicare Access and CHIP Reauthorization Act of 2015 (MACRA) included $60 million for THCGME over two years (2016, 2017). Although MACRA extended the program for two additional years, $60 million is estimated to be less than needed to maintain the program. Moreover, uncertainty about funding has already resulted in reductions in incoming THCGME positions and threatens the continued viability of many existing programs, as GME programs cannot operate on a year-to-year basis. Thus, even the uncertainty about funding may undermine the program.

A number of proposals for more stable funding have been suggested, including shifting to the Centers for Medicare and Medicaid Services. Should funding become more stable and predictable, an opportunity to expand programs to Maryland might be feasible. More residents being trained in Maryland would translate to more residents staying to practice in Maryland, especially in our areas of greater physician need, such as Western Maryland and the Eastern Shore.

By securing this vital program, states like Maryland could enjoy the benefit of primary care workforce to care for its citizens and improve the health of all Marylanders.

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LICENSE FEES Passed legislation ending longtime routine diversion of license fees to unrelated programs.

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The Shift: When People Become Patients

Taylor DesRosiers, MD; Nicky Mehtani, MSIV; Megan Gornet, MSIII; Stephanie Wang Zuo, MSIII; Robin Hrdina, MSIII; Amy Ruth Vandiver, MSIII; Taylor Purvis, MSI; Anna LaVigne, MSII; Travis Dichoso, MSIII; David W. Towle, DO; Peter Staiano, MSIV; Sunaina Kapoor, MSIII; Davis Rogers, MSI; Angeline Pham, MSII; Ryan Lange, MSIV; Caleb Fan, MSIII; Christine Shrock, MSII; Hasina Maredia, JHSOM MSI; Judy Doong, MSIII; Annie Song, MSII

Introduction

Glimpsing people at their most vulnerable, heartbreaking, and joyous moments is what makes medicine special. Extraordinary access and involvement drives young men and women to choose the physician's career and lifestyle, despite its ever-growing challenges and frustrations. With increasing awareness into physicians' health and well-being, organizations, including JAMA, have raised the call for support systems for physicians.[1]

In this issue of Maryland Medicine, *readers will read about the difficulties facing medical students in a twenty-first century learning environment, the financial struggle faced by residents with crushing debt, and the administrative burden of being a practicing physician. With experiences ranging from a student's entertaining first healthcare encounter, to a tenured professor's sad goodbye to a lifelong patient, the following collection of experiences aims to reignite the feelings of excitement, passion, and empathy the reader experienced, back in the days when the joys of our profession innumerably outweighed the struggles. While physician burnout may be rampant, with 70 percent of trainees reaching criteria for burnout, the beauty of our career allows us to persevere and thrive*[2,3]

Enjoy, and reflect on your finest moments as we detail those of others.

Nicky Mehtani, Johns Hopkins University School of Medicine MSIV

He lies on the counter before me, his clothing drenched and dried phlegm encircling his lips. His teenage mother had carried him through two snowy miles to our Pediatrics Clinic. I look at the list of preventive health questions our protocol requires I ask: Do you read to your son? Does anyone in the house smoke cigarettes? Are there guns at home? My attempt to maintain a confident demeanor thinly veils feelings of guilt. Guilt that I'm feigning ignorance. Guilt that despite my documentation of this encounter as a "Well Child Visit," the boy is undeniably sick. His disease is poverty.

Megan Gornet, Johns Hopkins University School of Medicine MSIII

Gruff demeanor contradicted a man whose hobby was carving delicate birds from wood. Powerless to his disease, he needed an outlet for his anger. He thrived on feigning annoyance with my visits. Always the grumbliest and grouchiest when I entered, though he never asked me to leave. I always stayed, and I knew he was grateful. At his request, his daughter delivered the last swan he would ever carve. It is engraved with his name; I will never forget. Thank you, my first patient.

Stephanie Wang Zuo, Johns Hopkins University School of Medicine MSIII

"Extend your arms and hold your palms up," I coach. "Now, close your eyes as I count to ten." Tonight, my husband winks as he fakes a dramatic pronator drift, making me slip out of character and laugh as we practiced the full neurological exam during my second month of medical school. Innumerable repetitions later, I still practice with my husband, the perfect "patient." Through thick and thin, he never fails to surprise me with his enthusiasm to join me on my journey in medicine.

Robin Hrdina, Edward Via College of Osteopathic Medicine MSIII

She was sixty-six and had married three months before. Eyes bright, she told me about her new cucumber plants. Four days later, I pulled out her endotracheal tube, slick with mucus. And she died. Her children huddled in the room, eyes swollen and clenched. As I walked out, the nurse offered a small smile and comforting pat. "There's a bigger picture" she said, "even though, sometimes you feel awful little in it."

Amy Ruth Vandiver, Johns Hopkins University School of Medicine MSIII

I crawl into bed after a long day and curl up next to my husband. I am overwhelmed with gratitude and guilt. Earlier, my patient, a seventy-seven year-old man who has been in the hospital for weeks, told me he just wants to go home because he misses falling asleep next to his wife. Everyday I comb through his chart—trying to find a magical answer that will fix him faster. But I'm just a student and medicine isn't magic, so, I'm at home falling asleep next to my husband while Mr. L and his wife sleep apart.

Taylor Purvis, Johns Hopkins University School of Medicine MSI

My hands folded in prayer that Thanksgiving, for you. I had stood by you in wrinkled scrubs with a heart full of questions. What man so hating would dare tear into this young flesh with the cold blade of a pocketknife? Is this the will of the One? I was supposed to watch the knots being tied into your ruined face, pushing, pulling. But your hands…those I remember. Their cold grip, how they squeezed as your voice tumbled over numbers, an alternating pattern of digits for a mother who would not answer our calls. Do you remember my hands?

Anna LaVigne, Johns Hopkins University School of Medicine MSII

I watched her from my position at the foot of the bed. She sat down next to him—physically sat down, bringing herself to eye level rather than towering over him as everyone else had done. She asked him about his family, about what this disease had cost him, about what he wanted to do more than anything else in these next few months. His eyes began to widen in curiosity over a question no one else had posed. Here was a physician who truly understood the notion of holistic care. Here was the physician I hoped to become.

Travis Dichoso, Edward Via College of Osteopathic Medicine MSIII

A scream, a plop, an expletive by the father. My first delivery as a medical student. In my arms, a warm, pulsing, crying baby. As I held the baby, I looked around the room. I was surrounded by an ecstatic family and a relieved father, but what

struck me was the crying mother who was seeing her child for the first time. After nine months of vomiting, doctor's appointments, and twelve hours of labor, there was that inexorable and precious bond between a mother and child unlike any other human relationship. When I got to my car, I called my own mother.

David W. Towle, MS MPH DO, DME RTD COL

I was privileged to do my internship at Madigan Army Medical Center. "Highly personalized care" was the exception, not the norm. My first cancer patient, a retired Master Sergeant with combat honors from Vietnam, gave me deep insight into his personal journey into eternity with both dignity and courage. While I could offer him no medical or surgical cures, I could offer him my time and respect. I was honored to serve as a sounding board for his frustrations and concerns and as a messenger for his loved ones. I spent time with him every day, even post call, as we had established enough rapport to make this comfortable for me and nonintrusive for him. After a few short weeks he died, with his hand in mine, the only comfort I could muster for an air hungry, end stage warrior. Rendering him his last military salute was one of the hardest reflections on the brotherhood of arms I had ever done.

Peter Staiano, Edward Via College of Osteopathic Medicine MSIV

Doctor. A six-letter word we all throw around every day. That word has become a permanent fabric of our being. That day the first person looked me in the eye and called me doctor… me... a doctor... her doctor! It was a profound moment realizing that someone would look at me that way. I was someone she would trust to take care of her. That moment, that connection, made all the struggles worth it.

Sunaina Kapoor, Johns Hopkins University School of Medicine MSIII

The very first day that I ever put my white coat on, I met my first patient—an elderly man who collapsed in front of me on the sidewalk during my walk to school. He began violently seizing, with bystanders looking at me desperately for help. How could I tell them that my only medical knowledge at the time had come from one week of anatomy and a campus tour? In that brief moment, my naivete had revealed itself—my white coat carried tremendous responsibility and duty toward society, not only within the hospital, but in every minute of life around me.

Davis Rogers, Johns Hopkins University School of Medicine MSI

"Dural meningioma above right temporal lobe. Everything is white." "Who are you," patient asks. "Just a student, here to learn." Anesthesia, done. Electrical leads, done. MRI-coordinated probe-guiding system, done. Room transformation. Everything is blue. No time wasted, immediate incision. Frequent questions from resident, "What muscle? Which artery?" Different from anatomy lab. Everything is red. Bigger than a golf ball, shaped like an ice cream scoop. Held high as if discovering life, tumor suspended above patient's head. I didn't know the brain beat. Sutures, screws, sutures, iodine, clean. "Where am I?" patient asks. "Everything is done."

Angeline Pham, George Washington University School of Medicine MSII

All of his memories, dreams, and thoughts fit neatly in the palms of my hand. After countless hours studying every muscle, nerve, and blood vessel during anatomy lab, I now held his brain in my hands. Throughout this journey, I had mentally detached myself from the fact that my cadaver was once a living, breathing person. It was my way of coping with the fact that I was taking apart a man's body. But on the last day of this adventure, I mustered up the strength to shed my defenses as I stood there quietly, taking in the bittersweet moment.

Ryan Lange, Johns Hopkins University School of Medicine MSIV

I rounded on her that morning, and she for all the world looked just like a little princess, in a frilly, pink gown. But as the other hospital children gathered into her room to celebrate, she sat in the corner, listlessly, facing the wall, photo-ready for the ballroom but too exhausted and nauseated from her chemotherapy to move. She had had her cancer for so long, I imagined that she sometimes lost sight of how to be a kid, her entire life flipping between pain and sedation. Back and forth and back and forth, relentlessly. My heart broke for that little girl, and I still wonder what suture I am supposed to use to mend it.

Caleb Fan, Johns Hopkins University School of Medicine MSIII

"Caleb!" my mother shrieked. I burst through the door and entered a scene straight out of a soap opera. My mother wailed and rocked back and forth as my father's limp body hung from her arms. "Move! And call 911!" His skin reflected blue. My two fingers pressed into his neck just as I'd learned in our intro to the wards course. No pulse. Radial? Nothing. "One… two…three," I huffed as my father's chest rebounded against my palms. Suddenly, his body reanimated and he whispered, "I'm ok." I slumped against the wall as the paramedics arrived with the sound of the doorbell, leaving a thought ringing in my head: Welcome to medicine.

Christine Shrock, Johns Hopkins University School of Medicine MSII

She was bald and pale, but when we began singing her favorite song, her face lit up and she beamed with joy. Other patients joined in as we sang, transforming the quiet floor into one radiating with smiles and choruses of holiday cheer.

Hasina Maredia, Johns Hopkins University School of Medicine MSI

As I removed the patient's socks, I was taken aback by what I had previously seen only in pictures—wet gangrene. The patient had not been aware that after his splenectomy as a child, he had needed vaccinations against encapsulated bacteria. I stood astounded and heartbroken at how a simple breakdown in communication would now lead to the patient, an avid runner, having both his feet amputated. Patient education is for me now forever at the forefront of formulating treatment plans.

Judy Doong, Johns Hopkins University School of Medicine MSIII

In the pediatric dermatology clinic, I met a memorable two-year-old toddler. What stood out was not his rare genetic syndrome, a form of progeria, but his energy and joy. He impressed us with his verbal skills by counting to fifteen, and saying simple phrases such as "I'm amazing!" He exemplified the meaning of not being represented by the outer appearance. Although his condition resulted in premature aging of his skin and several comorbidities, he showed such an infectious joy that reflected his young spirit. He truly was amazing!

Annie Song, Johns Hopkins University School of Medicine MSII

She spoke with tears and hopelessness: "I was abused by my stepfather since I was three... My mother never protected me... She started me on drugs... My best friend died in my arms…" All the positive things I said were confronted with "I will definitely try to kill myself again." In my heart, the interview turned personal. "What was your best friend's name?" "Jerny." "What would Jerny say about killing yourself?" She paused, "He'd beat me up!" A light went off. Suddenly she started laughing. She laughed with joy and said to me "Thank you" many many times...

Conclusion

Becoming a physician changes how we look at people. Physicians view patients differently; they become complex physiologic beings who occasionally follow the laws of nature. The vignettes in this article illustrate that we may understand how the body works from a scientific standpoint, yet it is the intangible moments and outcomes that breathe essence into the practice of medicine. The metamorphosis from person to patient is mirrored in the change from person to physician. Incorporating these self-reflective moments into our training may be an essential to preventing burnout in our profession, as these individuals so thoughtfully present moments of their lives to breathe joy, tears, and empathy into ours.[3] May our evolution continue, our childlike wonder with the human experience remain, and our growth as human beings and practitioners endure.

Introduction and conclusion by Taylor DesRosiers, MD, a recent graduate of Johns Hopkins School of Medicine. Dr. DesRosiers is now an Emergency Medicine intern at Naval Medical Center Portsmouth in Virginia, as a Lieutenant in the United States Navy. Dr. DesRosiers also serves on the editorial board of Maryland Medicine. *She can be reached at taylor@jhmi.edu.*

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The Single Graduate Medical Education Accreditation System

Alegneta Long, MPP, and Stephen Shannon, DO, MPH

Introduction

As the U.S. health care systems work toward more interconnectedness and uniformity, a push for a single standard in graduate medical education (GME) has arisen. Currently, there are two major systems in the United States by which GME programs are evaluated and accredited. The American Osteopathic Association (AOA) accredits osteopathic GME programs, and the Accreditation Council for Graduate Medical Education (ACGME) accredits all other GME programs.

In February 2014, the AOA, the ACGME, and the American Association for Colleges of Osteopathic Medicine (AACOM) agreed to a memorandum of understanding (MOU) to create a single accreditation system (SAS) for GME over a five-year period beginning on July 1, 2015.

Changes in the ACGME Accreditation System

In 2009, the ACGME embarked on an aggressive and ambitious program to enhance and restructure its accreditation system. As part of the effort, the organization integrated milestones and entrustable professional activities (EPAs) within the new system, calling it the Next Accreditation System.[1] Currently, this system is implemented within ACGME-accredited programs, and is influencing undergraduate medical education as a whole. (AACOM is looking at how to integrate EPAs within undergraduate medical education and is working with an EPA steering committee and liaison group to continue this work.)[2]

Changes in the ACGME Common Program Requirements that take effect in 2016 seek to create even stronger parameters by which learning and outcomes of residents and fellows is monitored, streamlined, and standardized. With the new changes, ACGME fellowship training in particular will be largely limited to those who are graduates from ACGME-accredited residency programs.

Given these changes and the desire among osteopathic medical students to have the option to continue their training in ACGME-accredited fellowship programs, the SAS would afford osteopathic medical students access to fellowship programs and in general would level the playing field for both DO and MD candidates in the future. During the transition to the SAS, graduates of AOA-accredited programs who have started the process of seeking ACGME accreditation and have received "pre-accreditation status" will be subject to ACGME eligibility requirements in effect in 2013 or 2016—whichever is less restrictive.[3]

Osteopathic Recognition and Recruitment of Osteopathic Medical Students

One of the unique opportunities in the SAS is that all ACGME-accredited programs can now apply for "Osteopathic Recognition," which is the primary mechanism by which osteopathic principles and practices (OPP) are incorporated within the ACGME accreditation system. Osteopathic Recognition is conferred upon any ACGME-accredited graduate medical education program providing requisite training in OPP. The Osteopathic Principles Committee (OPC) will evaluate adherence to the Osteopathic Recognition requirements.[4,5]

In July 2014, AACOM initiated a process to inform the field and provide recommendations on how OPP can be integrated into the SAS. The AACOM Ad Hoc Committee on GME Transition developed a report, *Next Steps in Graduate Medical Education: Osteopathic Graduate Medical Education and the Single GME Accreditation System*, featuring the work of a nine-member committee of thought leaders in the osteopathic medical education field.[6] A key consideration for graduates of (Liaison Committee on Medical Education) LCME-accredited institutions were the prerequisites to succeed within an osteopathic-focused program.

Already, several dually accredited programs and newly transitioned programs have achieved Osteopathic Recognition. Interestingly, several ACGME-accredited programs without previous affiliation with an AOA-accredited program also have shown interest in Osteopathic Recognition. Programs are seeking this designation because of the value of osteopathic principles and practice and their interest in attracting osteopathic medical students. Students have shown interest in pursuing programs with Osteopathic Recognition: In a survey conducted by AACOM in March 2015, 70 percent of third-year osteopathic medical students expressed interest in ACGME-accredited programs with Osteopathic Recognition over those without the designation.[7]

As part of the SAS, the ACGME also created the Osteopathic Neuromusculoskeletal Medicine Review Committee (ONMM RC) to create program requirements for a new specialty in Neuromusculoskeletal Medicine.

Governance and Launch of the Single Accreditation System Application Process

A governance structure that integrates AACOM and AOA as ACGME member organizations and incorporates osteopathic physicians in various review and recognition committees is established. Two board members nominated by AACOM and two nominated by AOA were appointed to the ACGME board in January 2015. By the end of the transition, there will be a total of four AOA and four AACOM nominated members of the ACGME board. Many AOA nominated osteopathic physicians are now members of twenty-three ACGME Review/Recognition Committees.

Since the launch of the application process for institutions, on April 1, 2015, and for programs, on July 1, 2015, many institutions and programs have applied for ACGME accreditation, and many have already received ACGME Initial Accreditation. As of April 2016, approximately 30 percent of AOA-accredited programs (including dually accredited programs) have applied or have completed the ACGME accreditation process. Surgery, internal medicine, family medicine, and emergency medicine are among the specialties with the largest number of applications so far.

To ensure that students are protected and that programs act responsibly in the process, the AOA established several standards to encourage programs to apply early for ACGME accreditation.

As programs apply and the ACGME Review Committees evaluate programs, much of the progress of the transition remains to be seen. AOA-accredited programs have a unique opportunity, under the MOU, to apply multiple times without additional fees if they do not receive initial accreditation after the first or subsequent attempts.

Changes Ease the Transition for AOA-Accredited Programs and Osteopathic Medical Students

The MOU was intended to be the beginning of an effort that will organically grow and impact the work of ACGME and ACGME Review Committees. One of the key difficulties for the osteopathic profession, at the outset, was that AOA-board certified program directors could be required to have an ABMS board-certified co-program director. This requirement, of course, creates an added financial and administrative burden for AOA-accredited programs and institutions. In early 2015, the vast majority of ACGME Review Committees made sweeping decisions that co-program directors would not be required for programs with AOA board certified program directors. Program directors would have to meet the other requirements as directed by the respective Review Committee. As of February 2016, only one specialty—neurological surgery—still requires an ABMS board certified co-program director.[8]

There was concern about whether the one-year osteopathic traditional rotating internship—or in the ACGME world, transitional year program—would be accepted in ACGME residency programs that require a preliminary year because of the changes in the common program requirements that take effect in July 2016. The ACGME Review Committees that require a preliminary year decided that they would accept an AOA-accredited traditional rotating internship in these cases, although each review committee outlined its own specific stipulations on this decision.[9]

The ACGME Transitional Year Review Committee, after careful deliberation and review of data, revised their program requirements, requiring only one sponsoring program (instead of two) for transitional year programs. The revision was made to create a smoother pathway for AOA-accredited traditional rotating internships to seek ACGME accreditation as transitional year programs.

Such positive developments by the ACGME Review Committees toward the success of the SAS were received enthusiastically within the osteopathic profession and continue to have a major impact on the success of the first year of the transition.

Final Thoughts

Once the SAS is fully underway, we anticipate that some programs will need to make adjustments to adhere to ACGME requirements. In others, there will be a smoother transition. Much is yet to be determined and observed.

As we traverse the transition, many changes may be necessary on behalf of the accreditation systems, programs, and institutions to ensure a smoother process for all key stakeholders—particularly students, residents, and fellows. The intent of the single accreditation system is to align learning, teaching, and evaluation in clinical training and to promote health and health care for the public by enhancing education. SAS should also build a stronger collective voice within medical education and health care to advocate for GME and expand residency positions to meet the nation's health care needs.

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Hospitalist Co-management of Pediatric Orthopaedic Surgical Patients at a Community Hospital

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MARYLAND HEALTH PERSPECTIVE

Abstract

Purpose

The benefits of hospitalist co-management of pediatric surgical patients include bettering patient safety, decreasing negative patient outcomes, providing comprehensive medical care, and establishing a dedicated resource to patients for postoperative care. The purpose of this study was to characterize the nature of patients co-managed by a pediatric hospitalist. The authors hypothesize that hospitalist co-management is safe and efficacious in pediatric orthopaedic surgical patients who are admitted to a community hospital.

Methods

A retrospective review was performed of all pediatric orthopaedic surgical patients admitted to a community hospital who were co-managed by a pediatric hospitalist. Indications for hospitalization included pain control, antibiotic infusion, and need for neurovascular monitoring.

Parameters of postoperative care and co-management were assessed, including presence of complications, medication introduction or adjustment by the hospitalist, follow-up adherence, and readmission/complication rates after discharge.

Results

Thirty-two patients were assessed with an average age of 8.8 years. Twenty-five percent of patients had an associated comorbidity, including asthma, attention deficit disorder, and/or autism.

The pediatric hospitalist added pain medication to the original postoperative orders placed by the orthopaedics team in 44 percent of patients (14 of the 32) either for breakthrough pain or better long-term coverage. Additionally, 25 percent of patients had pain medication adjusted from the original dosing and schedule. The hospitalist team contacted the surgeon about the four patients (12.5 percent). In three of the cases, the surgeon was contacted to discuss pain medication, and one patient woke up agitated from anesthesia, necessitating a visit from the surgeon on the pediatrics floor.

The length of stay was one day for all patients. The hospitalists rounded on and discharged patients the subsequent morning. All patients were given a follow-up appointment and schedule by the hospitalist team, and every patient followed up accordingly within ten days of discharge. No complications or hospital readmissions occurred within thirty days of discharge.

Conclusion

Hospitalist co-management of pediatric orthopaedic surgical patients in a community hospital allows for better medical comorbidity and medication management. Hospitalists can provide closer observation during the inpatient stay and help streamline communication between providers and patients while allowing the surgeon the ability to be more mobile. Co-management is safe and efficacious in pediatric orthopaedic surgical patients who are admitted to a community hospital.

Introduction

Hospitalist co-management of pediatric surgical patients is increasing in prevalence.[1] Co-management strives to efficiently deliver coordinated care and improve patient safety.[2] Traditional models of medical care for surgical patients include medical consultation when requested by the surgical team for a specific medical problem,[1] whereas co-management represents a more proactive partnership among providers. Co-management of surgical patients can provide substantial value by improving patient safety, decreasing negative patient outcomes, providing a dedicated resource for nurses and families, limiting resource use, and allowing surgeons more time to operate. [1, 3-6]

In orthopaedics, several studies have evaluated the proposed benefits of hospitalist co-management. Co-management of adults undergoing hip or knee replacement has demonstrated mixed results. Some studies have shown decreased length of stay, complication rates, and mortality, while others have shown no benefits at all.[6, 7] In contrast, adults who sustain hip fractures and are medically co-managed have decreased patient morbidity, length of stay, and readmission rates.[8, 9] A pediatric hospitalist co-management model in medically complex spinal fusion patients at a tertiary care children's hospital has been shown to decrease median length of stay from 6.5 to 4.8 days.[10] Rappaport et al. also showed a decreased use of parenteral feeds and decreases in the number of laboratory studies ordered.[11] However, no studies have examined pediatric hospitalist co-management at a community hospital.

The purpose of this study was to characterize the nature of patients co-managed by a pediatric hospitalist in a community hospital setting and assess the hospitalists' interventions provided for these patients.

Methods

A retrospective chart review was conducted of all pediatric orthopaedic surgical patients requiring hospitalization who were co-managed by a pediatric hospitalist in a community hospital from 2013 to 2015. The indications for hospitalization postoperatively included neurovascular monitoring, antibiotic management, and/or pain control.

Setting and Background

Patients were treated at a suburban 300-bed community hospital.

Hospitalist Co-management Structure

The pediatric orthopaedic surgical interdisciplinary team consists of a pediatric fellowship trained orthopaedic surgeon, anesthesiologists, five full-time pediatric hospitalists, and pediatric

nurses. A pediatric hospitalist co-manages all pediatric orthopaedic patients without the use of any clinical protocols. No physician extenders or residents are used.

The general postoperative procedure for these patients was first to be transferred to the post-anesthesia care unit (PACU) for observation. All patients received a specific surgical management plan designed by the primary surgeon including pain control, antibiotic dosing and schedule, cast/splint/dressing care, and neurovascular examination schedule. The plan was provided in written form and verbally communicated to the PACU and pediatric hospitalist covering the general pediatric unit. Following transfer of the patient to the general pediatrics unit, the pediatric hospitalist and nursing staff examined the patient and managed his or her medical care for the duration of the hospital stay. Hospitalists could alter the pain management and antibiotic dosing/schedule, introduce new medications, and implement other medical interventions. Discharge instructions were outlined by the surgical team and reviewed with the patient by the hospitalist. When a patient was discharged, the hospitalist clearly delineated follow-up care and the surgeon provided subsequent care on an outpatient basis.

Data Collection and Analysis

Patient demographic data and qualities of postoperative care were collected from medical records. Demographics, including age, gender, and presence of comorbidities, were recorded. The patient's diagnosis, type of surgery, and length of surgery were reviewed. Parameters of the postoperative care and co-management were assessed, including presence of complications and/or infection, medication introduction or adjustment by the pediatric hospitalist, follow-up adherence, and readmission/complication rates within thirty days of discharge.

Results

The charts of thirty-two patients were identified and reviewed. Mean patient age was 8.8 ± 4.27 years. Of the patients studied, eight (25 percent) had a comorbidity, including asthma, attention deficit disorder, and/or autism (Table 1).

TABLE 1: PATIENT DEMOGRAPHICS

Demographics	Number of Patients	Percentages
Age	Average: 8.8 ± 4.27 years	
Sex		
Male	20/32	62.5%
Female	12/32	37.5%
Comorbidity	8/32	25.0%
Asthma	6/32	18.75%
ADD	2/32	6.25%
Autism	1/32	3.12%

Mean surgery time was forty-six minutes. All patients received preoperative antibiotics. Diagnoses and procedures performed are summarized in Table 2.

Postoperatively, twenty-four patients (75 percent) were continued on antibiotics, including twenty-three on cefazolin and one on clindamycin. The postoperative pain management plan generally consisted of oxycodone and/or acetaminophen given every four to six hours as needed. The pediatric hospitalist added pain medication in fourteen patients (44 percent), either for breakthrough pain or better long-term coverage. Additionally, eight patients (25 percent) had pain medication increased from the original dosing and schedule. Pain medication adjustments and additions are summarized in Table 3. One patient's antibiotic was changed from cefazolin to cephalexin, and two patients additionally received diphenhydramine. The hospitalist contacted the surgeon about

TABLE 2: DIAGNOSES AND PROCEDURES

Diagnosis	Number of patients	Percentage of patients	Procedure
Supracondylar Fracture	13/32	40.6%	CRPP
Slipped Capital Femoral Epiphysis	7/32	21.9%	Percutaneous Pinning
Both-Bone Forearm Fracture	2/32	6.25%	Flexible Intramedullary Nail Fixation
Tibial Tubercle Fracture (Displaced or Avulsion)	2/32	6.25%	ORIF
Tibial Shaft Fracture	1/32	3.1%	Intramedullary Nailing
Distal Tibia Fracture	1/32	3.1%	ORIF
Distal Radius Nascent Malunion	2/32	6.25%	Corrective Osteotomy & ORIF
Femur Fracture	1/32	3.1%	ORIF
Syndactyly of Long-Ring Fingers	1/32	3.1%	Syndactyly Correction with Skin Graft
Clavicle Fracture	1/32	3.1%	ORIF
Lateral Condyle Humerus Fracture	1/32	3.1%	CRPP

TABLE 3: PAIN MEDICATION DOSING AND ADJUSTMENTS

Pain Medication Dosing and Adjustments		
	# of patients	% of patients
Pain Management Plan		
Acetaminophen	13/32	40.6%
Oxycodone/Acetaminophen	11/32	34.4%
Oxycodone	3/32	9.4%
Toradol	1/32	3.1%
Acetaminophen/Codeine	2/32	6.25%
Hydromorphone/Acetaminophen	1/32	3.1%
Acetaminophen/Fentanyl	1/32	3.1%
Pain Medication Dosing Adjusted by Hospitalist	8/32	25%
Oxycodone/Acetaminophen - Dosing doubled	2/32	6.25%
Acetaminophen - Additional doses	5/32	15.6%
Oxycodone - Additional doses	1/32	3.1%
Pain Medication Added by Hospitalist	14/32	43.75%
Morphine	5/32	15.6%
Ibuprofen	4/32	12.5%
Dilaudid	1/32	3.1%
Acetaminophen	1/32	3.1%
Fentanyl	1/32	3.1%
Toradol	2/32	6.25%

four patients (12.5 percent). In three of these cases, the surgeon was contacted to discuss pain medication; one patient experienced post-anesthesia agitation.

The length of stay for all patients was less than twenty-four hours. All patients were given a follow-up orthopaedic appointment, and every patient followed up accordingly within ten days of discharge. No patient had surgery related complications, nor were any readmitted within thirty days of discharge.

Discussion

Hospitalist co-management of surgical patients may provide several advantages if implemented effectively. A viable co-management program requires a multifaceted approach that can robustly deliver all aspects of medical care to a hospitalized patient. The basic components of a successful co-management program[1] are outlined in Table 4.

TABLE 4: COMPONENTS OF A CO-MANAGEMENT PROGRAM

1.	All providers must have a similar investment and accountability in patient outcomes
2.	Each provider must have a designated role in providing care that is agreed upon
3.	There must be a flow of information and education among all providers
4.	Relationships between providers must be developed and maintained with open communication
5.	There must be enough staffing to cover the volume of patients

Previous studies have focused on co-management of medically complex pediatric patients undergoing spinal fusion, and reported on specific patient outcomes including length of stay, adverse events, and patient satisfaction.[10-12] However, the patients at community hospitals are less likely to be medically complex. Of the patients studied, eight (25 percent) had a medical comorbidity, which was primarily controlled asthma.

Potential benefits of hospitalist co-management in this fairly healthy population are multiple:

First, hospitalists may improve pain management. Of all the patients studied, fourteen (44 percent) had pain medication added by the hospitalist and eight patients (25 percent) had their pain medication adjusted. A dedicated hospitalist present on the pediatric unit acutely managing pain symptoms may allow for better pain control, [3] higher patient/family satisfaction, and fewer interruptions in the operating room.

Second, potential complications may be addressed in a timely fashion. The American Academy of Pediatrics recommends an anesthesiologist or physician trained in perioperative care should be immediately available to address postoperative complications and be able to provide cardiopulmonary resuscitation if necessary. [13] Two patients in this study had allergic reactions to medications postoperatively that were quickly assessed by the pediatric hospitalist and effectively treated with diphenhydramine.

Third, the surgical team may benefit from the co-management program. When issues arise that can be managed by the hospitalist, the surgeon can continue to operate on other patients without interruption. The hospitalist's ability to assess and discharge patients the following morning allows the surgeon to attend to other responsibilities, often at a different location from the community hospital.

The model presented in this study potentially allows for non-medically complex patients to receive specialized pediatric care at a community hospital. For example, a pediatric orthopaedic surgeon may perform procedures at a community hospital several hours away from a tertiary care center using pediatric hospitalist co-management and return to the tertiary care center the following day. As more subspecialists treat patients in satellite settings, this model may allow for less patient travel while still receiving specialized care.

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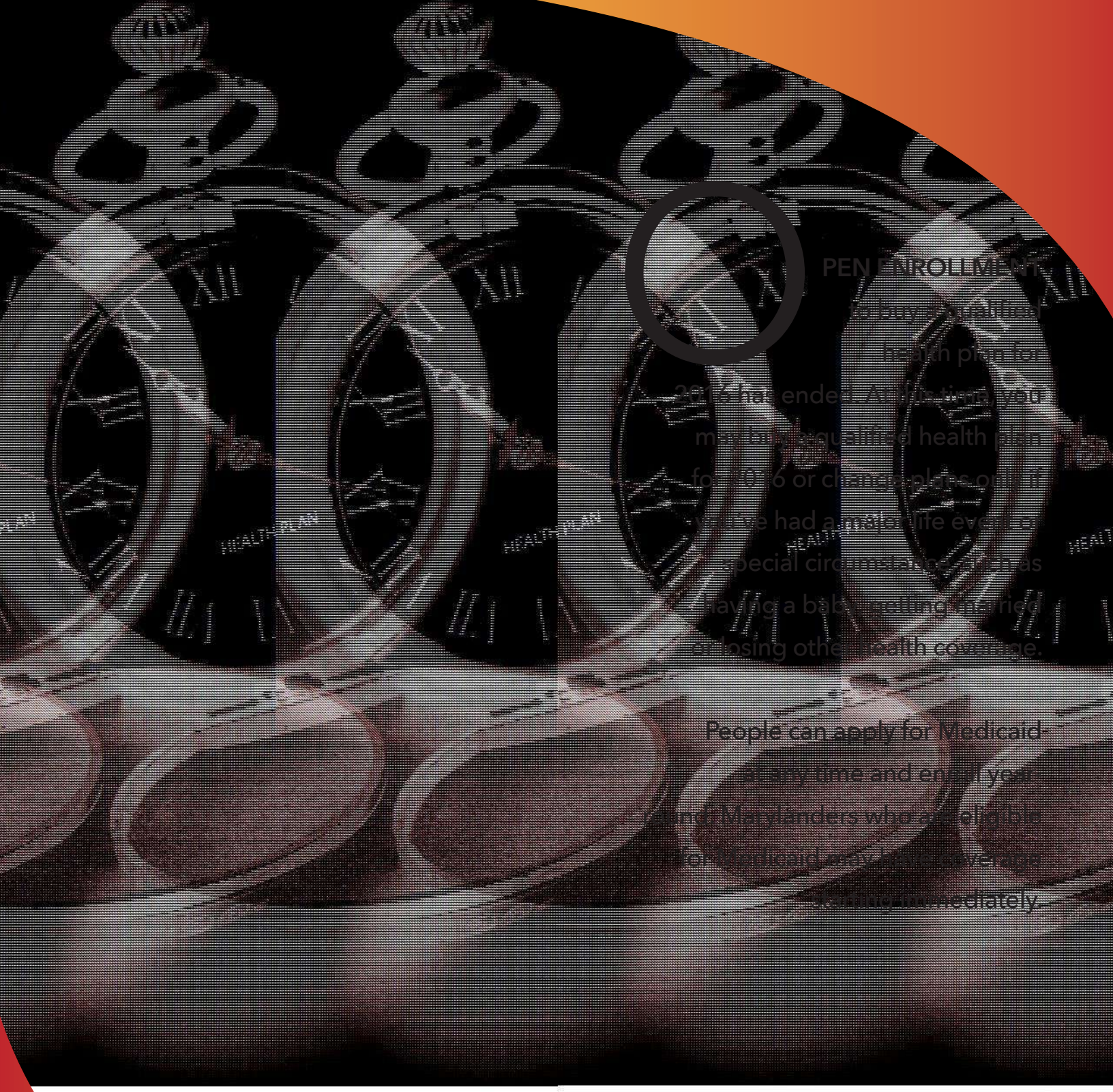

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- Change in tax filing status,
- Change of citizenship or immigration status,
- Incarceration or release from incarceration,
- Change in status as an American Indian/Alaska Native or tribal status, and
- Certain errors or exceptional circumstances, which are reviewed on a case-by-case basis.

You should report any major life event or other changes that may not affect your eligibility for coverage, such as corrections to name, date of birth, or Social Security Number.

As part of the eligibility decision process, you may be asked to provide documentation regarding your income, lawful presence, incarceration status, and/or American Indian or Alaska Native affiliation.

It is important to note that generally you cannot qualify for a special enrollment period if you lose your health coverage because you have stopped paying your premiums. Also, there is no special enrollment period available to people because they become ill, develop a chronic condition or have an accident.

Becoming pregnant is not considered a life event that triggers a special enrollment period to enroll in a qualified health plan through Maryland Health Connection outside of open enrollment or to change your current health plan. However, giving birth will qualify you for a ***special enrollment period***. If you are pregnant, you should report this information to Maryland Health Connection as soon as possible because you may qualify for Medicaid. You can apply for Medicaid at any point during your pregnancy. Medicaid enrollment is year-round; you do not need to qualify for a special enrollment period in order to apply for benefits outside open enrollment.

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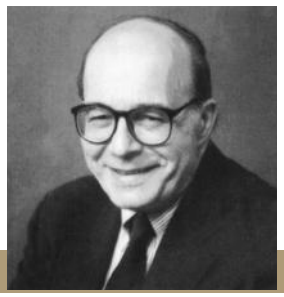

Eponymic Gems

WORD ROUNDS

Barton J. Gershen, MD
Editor Emeritus

A year ago I turned eighty-two, realized my time was diminishing, and decided to stop writing this column. I was content with my decision until recently, when the Zika virus turned up. Newspapers, radio, television, and the Internet have maintained a steady torrent of information on this contagion, rivaled only by their coverage of the 2016 presidential election. My curiosity was roused by its name—what was its origin? That led to a larger question: Where did the names of other infectious agents and their illnesses originate? I was hooked, and thus this column. My self-enforced retirement will be breached, at least for this one occasion.

Zika virus is related to Yellow Fever, Dengue, and other Flaviviruses, transmitted by members of the Aedes mosquito family. It was initially discovered in 1947 within the **Zika Forest** of Uganda. (**Flavivirus** derives from Latin *flavus*, "yellow," named for Yellow Fever, the first disease associated with this viral family.) The **Zika Forest** is a sixty-acre tropical reserve next to Waiya Bay, an area devoted to mosquito research, and owned by the Uganda Virus Research Institute of Entebbe. In the Ugandan language, *Zika* means "lush or dense," referring to its luxuriant growth.

Africa seems to be a repository for many exotic infections, among which the **Ebola virus** may take first place. This virus is endemic in bats, monkeys, and gorillas, and is initially transmitted to humans by contact with the blood or other body fluids of these animals. Once infected, human-to-human transmission becomes the route of severe epidemics, such as the one experienced in 2014. Mortality rates as high as 90 percent have been reported, making this disease among the deadliest infections in the world. In 1976, the first case of Ebola was found in the Democratic Republic of Congo, within a village located on the **Ebola River,** from which the virus derives its name.

The Ebola virus is a member of the **Filovirus** family, which also includes the **Marburg Virus**. (**Filovirus** from Latin *filum*, "filament," named for the fibrils attached to the virion as seen with the electron microscope.) The Marburg Virus causes a severe form of hemorrhagic fever, which carries a mortality rate of 25 to 100 percent. The first cases of Marburg Virus Disease were identified in the city of **Marburg, Germany,** in 1967.

Hanta Virus is confined to rodents, infecting humans by accidental contact with their urine, feces, or saliva. The result may be a severe hemorrhagic illness with renal and/or pulmonary involvement. The virus is named for the **Hantan River** in South Korea, where the first cases were recognized. Hanta Virus is a member of the Bunyavirus family, which takes its name from Bunyawera, Uganda, a village where the initial type species was identified. In addition to Hanta Disease, this family also includes **Rift Valley Fever**, and **Crimean-Congo Fever**. In 1993, a severe pulmonary disorder emerged within the four corners region of southwest United States. It was caused by an infectious agent named *Sin Nombre Virus*, the virus causing the **hantavirus pulmonary syndrome.** Its name in Spanish means "the nameless virus."

Lassa Fever is another zoonotic infection similar to the Hanta Virus, and spread by human contact with mouse urine, feces, or saliva. It results in acute hemorrhagic fever, and bears a mortality rate up to 50 percent during epidemics. The name originated from the town of **Lassa, Nigeria,** where the first cases were described in 1969. Lassa virus is a member of the **Arenavirus** family, so-named for the granules within the virion, which resemble sand. (Latin *arena*, "sand." An **arena** where contests are held was originally a sandy area within a stadium.)

Not all viral illnesses are as lethal as those described above. The **Coxsackie virus** is an enterovirus, living in the gastrointestinal tract, and spread by the fecal-oral route. The virus was initially recovered in 1948 from a group of febrile children, who were suspected of having poliomyelitis. The children lived in the village of **Coxsackie, New York,** located twenty-five miles south of Albany, and the virus was accordingly named. *Coxsackie* is from the Iroquoian language and means "place of many owls." The Coxsackie virus belongs to the Picornavirus family. (**Picornavirus** from Spanish *pico*, "small," plus RNA. It is a small RNA virus.)

There are two divisions of the Coxsackie virus. Group A is associated with herpangina, hand-foot-mouth disease, and conjunctivitis. Group B with pleurisy, pericarditis, myocarditis, and hepatitis. Both groups may cause mild to moderate febrile disease, upper respiratory infection, and aseptic meningitis. A severe form of pleurisy ("epidemic pleurodynia" or "the Devil's grip"), caused by Coxsackie B, was initially described in residents living on the Danish island of Bornholm in 1933—thus named **"Bornholm Disease."**

Bacterial infections also sport eponymic origins. **Tularemia**, caused by the bacterium *Francisella tularensis*, was initially detected in **Tulare County**, California, from which it received its name. The pathogen is named for **Edward Francis**, a physician and bacteriologist, who contracted the disease and kept meticulous records of his illness. He was awarded the AMA Gold Medal in 1928 for his contributions. Tularemia is classified as a biological warfare agent by the CDC, taking its fearsome place alongside Ebola, Anthrax, and Plague.

In 1975, a group of children and adults living in a small village twenty miles northwest of New London, Connecticut, developed a mysterious arthritic illness. A meticulous investigation discovered that

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Word Rounds continued ...

continued from page 40

the cause was an infection with *Borrelia* burgdorferi, caused by the bite of the black-legged deer tick *Ixodes scapularis*. The village was **Lyme, Connecticut**, and so the disease became known as **Lyme arthritis**. (The name Lyme originated from the English town of **Lyme Regis**, famous for its **Lime trees**, also known as Linden or Basswood trees.) The genus and species name for the Lyme organism derives from Amédée Borrel (1867–1936), a French biologist, and Swiss zoologist Willy Burgdorfer (1925–2014), who discovered the spirochete in 1982.

Numerous microorganisms and their diseases are named for the investigators who discovered them. We haven't the space to chronicle all of them, but a quick inventory would list **Salmonella** for **Daniel Salmon**, a veterinary pathologist who was first to describe the organism now known as *Salmonella cholerasuis*; **Shigellosis** for Japanese bacteriologist **Kiyoshi Shiga**; and **Brucellosis** for **Sir David Bruce,** Scottish physician and bacteriologist who initially recognized the organism (now called *Brucella abortus*) that causes Malta Fever and Bang's Disease. (**Malta Fever** because Bruce isolated the organism on the island of Malta; Bang's Disease is brucellosis in cattle and was named for the Danish veterinarian **Bernhard Bang**.)

The most interesting eponymic infection is one named for a fictional character in a poem. In 1530, a physician named **Girolamo Fracastoro**, composed a poem about a hapless shepherd boy who had insulted the God Apollo, and was punished by acquiring a sexually transmitted disease. The poem was titled *Syphilis sive morbus gallicus*, which translates to "Syphilis, or the French Disease." The boy's name was **Syphilis**, and the disease was named for him.

The English language is filled with words whose origins often delight and astonish its speakers. The world of medicine is no different in that respect, and finding the roots and ancestry of terms can be as joyful as practicing medicine used to be.

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

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