

# ST. LOUIS METROPOLITAN MEDICINE

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## Artificial Intelligence and the Future of Medicine

Page 12

### Inside

- 2 ➤ Technology: A Love-Hate Relationship
- 10 ➤ *BrainWorks*: Neuroscience Theater
- 16 ➤ SLMMS Members Offer Insights on EHR
- 20 ➤ Opportunities in Telemedicine

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## Cover Feature: Technology & Artificial Intelligence

**Artificial Intelligence and the Future of Medicine** 12

*How big data could change health care*

► By Julia Evangelou Strait

**An Introduction to Artificial Intelligence** 14

**Artificial Intelligence for Fall Prevention** 15

**What Makes EHR So Stressful? SLMMS Members Weigh In** 16

*Member poll reveals aspects of EHR where improvement is most needed*

**The Many Pitfalls of Electronic Medical Records** 18

*What should a physician do when medical records are requested?*

► By Lisa Howe and Alejandro Valdez

**Increasing Utilization of Non-Traditional Patient Care Sites** 20

*Opportunities for Physicians*

► By Todd A. Zigrang, MBA, MHA, FACHE, CVA, ASA & Jessica L. Bailey-Wheaton, Esq.

**Taking a Proactive Approach to Your Medical Practice's Cybersecurity** 22

*Prevention is the best medicine*

► By Ryan Haislar

## Features

**Brain Works: Neuroscience on a Human Level** 10

*WU physicians combine theater and video to create a unique public education experience*

► By Jim Braibish, St. Louis Metropolitan Medicine

**Commentary: A "How-To" Primer on Getting Involved in Medicine** 25

► By David L. Pohl, MD

## Columns

**President's Page: Medicine and Technology: A Love-Hate Relationship** 2

► By Ramona Behshad, MD

**Executive Vice President: Moving ... in More Ways Than One** 4

► By David M. Nowak

**Harry's Homilies: On Technology** 21

► By Harry L.S. Knopf, MD

**Parting Shots: For the Record** 24

► By Richard J. Gimpelson, MD

## News

**Sam L. Page, MD, Appointed St. Louis County Executive** 5

**SLMMS Seeks Future Leaders** 6

**Nominations Open for SLMMS Annual Awards** 6

**Medical Society Antiques and Furniture Available for Purchase** 8

## Departments

17 News Briefs

23 Alliance

23 Obituaries

25 Welcome New Members

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# Medicine and Technology: A Love-Hate Relationship

## Physicians should prioritize spending time with patients as they apply technology

By Ramona Behshad, MD, Medical Society President



Medical Society President  
Ramona Behshad, MD

By better training future physicians in the use and assessment of technology, we will be better equipped to remedy the ills facing our patients as well as our health care system.

What gives physicians professional satisfaction and joy? Interacting with patients. Twenty-first century health care, however, pulls providers away from patients. Information from the American Medical Association shows that doctors spend half as much time engaging face-to-face with patients as they do engaging face-to-screen with the electronic health record (EHR).<sup>1</sup>

Technology has brought many incredible advances, such as high-resolution imaging, targeted chemotherapy, gene therapy, 3D printing and the cure for Hepatitis C. Technology also has down sides. It is generally agreed that new technology is a primary cause of ever-increasing health care expenditures. Not to mention electronic medical records, which have made physician notes both much more legible and less worthy of reading.

Because of this, our profession is deeply ambivalent about its technology. We remain both enamored of our new devices and also resistant to change. The increasingly intimate relationship of medicine with technology has several implications for patients, physicians and the health care system.

### Clinical Skills

*“The belief is more or less prevalent that the powers of observation so markedly developed in our predecessors have, to a large extent, become blunted in us, owing to the employment of instrumental aids to exactness...”*

— Harvey Cushing in the *Boston Medical Surgery Journal*, 1903<sup>2</sup>

Many physicians lament the loss of clinical skills resulting from advances in technology. The exam skills of today’s most seasoned physician pale in comparison with those of earlier eras. Laennec, for example, listened for

several types of rhonchi: the moist crepitus rhonchus, the dry crepitus rhonchus, the dry sonorous rhonchus and the dry sibilous rhonchus. Few examiners would recognize these sounds today, let alone their names. It is much easier to order a chest X-ray or CT scan, but many physicians worry about the increasing reliance on technology to make a diagnosis. Is a return to physical diagnosis the correct answer?

To answer this question, we need to look at history. Physicians have historically resisted new technology as an intrusion. Three hundred years ago, Daniel Fahrenheit proposed a new “temperature sensor” now known as a thermometer.<sup>3</sup> However, many of his colleagues argued that the physician’s touch captured information far better than any tool. For the next 100 years, many physicians avoided the glass tube, preferring to use their hands to feel temperature.

Our profession is deeply ambivalent about its technology. We remain both enamored of our new devices and also resistant to change.

When Harvey Cushing brought back his sphygmomanometer from Italy in 1901, it met with a mixed reaction. Just as contemporary authors voice concern about imaging technologies, physicians at the time felt that Cushing’s device would “intervene between patient and doctor” and “dehumanize the practice of medicine.”<sup>4</sup>

These examples demonstrate that resisting change is not always wise. Instead of listening to heart sounds with the patient standing

up, sitting down, lying flat and their legs elevated, we should spend this time talking to our patients. Dwindling revenue along with increasing overhead is pressuring many physicians to replace the time freed by technology with seeing another patient. An alarming statistic was recently published showing that doctors listen to their patients for 11 seconds on average before interrupting.<sup>5</sup> Our system has made us impatient with the patient.

If regulated and well implemented, machines that learn have the potential to bring huge benefit to patients. In addition to diagnosing health problems, AI can be used to prevent the onset of numerous conditions.



Decreasing time with patients combined with increasing use of technology are damaging the patient-doctor relationship and resulting in physician burnout. Instead of blaming technology alone, we must look at ourselves and at the system. For those under these pressures, ordering a test may seem faster than obtaining a history.

Our health care system is broken, and policy change is the only way to fix it. This is where being part of a medical organization such as SLMMS and MSMA can help. Through organized medicine, we can encourage all policymakers to recognize the valuable role physicians play in our society. We need policies that encourage us to do our jobs properly instead of punishing us for spending time with our patients.

Until the system is fixed, the patient-doctor relationship will continue to suffer. There can be little hope of improving the quality of patient care, reducing medical errors and harm to patients, or reforming our health care system without a better understanding and application of technology by its practitioners. One way to break the cycle is to teach medical students the responsible use of imaging and technology.

### Medical Student Education

The responsible incorporation of technology into medicine should begin in medical school. Students need to see and examine the patient so that they can distinguish a distended neck vein from a carotid artery. But they will also need to know when—and when not—to order an echocardiogram or CT angiogram. By better training future physicians in the use and assessment of technology, we will be better equipped to remedy the ills facing our patients as well as our health care system.

Because today's clinical exam includes technology, it should be taught systematically, evaluated rigorously, and assessed for cost-effectiveness. Currently, students and trainees still receive little formal training in technology. In the absence of a

formal GME curriculum, practices are passed down informally from faculty and peers to trainees and students. Although there is admittedly little room for more content in the already overcrowded undergraduate and graduate curricula, few areas could be considered more important for the training of future physicians.

### The Future

Artificial Intelligence (AI) is slowly permeating our lives, and some fear that it will replace physicians completely. Certainly, there will be those experienced clinicians who regard AI as an infringement on their clinical acumen. AI may have the potential to become a useful and innovative aide in health care, but there will always be room for humanity—human health care professionals.

If regulated and well implemented, machines that learn have the potential to bring huge benefit to patients. In addition to diagnosing health problems, AI can be used to prevent the onset of numerous conditions. Using AI, subtle trends in health data like heart rate and blood pressure from an activity monitor can be identified early, giving clues that chronic disease may be developing. Moreover, AI can integrate and analyze multiple streams of health data simultaneously. With this information, doctors can react early by providing preventative care to avoid expensive chronic illness.

While AI will have its role in medicine, the ability to understand fully the human condition will always be essential to health management. Patients need to be cared for by people, especially when we are ill and vulnerable. Ultimately, no one wants to be told bad news by a robot. Although AI may not ultimately replace the physician, the physician who uses AI may replace the one who does not. ➔

*Ramona Behshad, MD, is an assistant professor in the Department of Dermatology at Saint Louis University School of Medicine and director of the Division of Mohs Surgery and Cutaneous Oncology.*

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# Moving ... in More Ways Than One

By David M. Nowak, Medical Society Executive Vice President



Executive Vice President  
David M. Nowak

Advocating for changes to support the practice of medicine is one of the most demonstrable ways that organized medicine benefits physicians.

The 161st annual convention of the Missouri State Medical Association (MSMA) convened in Kansas City April 5-7. Once again, we had a healthy contingent of SLMMS members who served as District 3 delegates and participated in the lectures, specialty society meetings and other events throughout the weekend.

This year, a total of nine resolutions from across the state were brought forward to the reference committees and the MSMA House of Delegates. Four of these resolutions were authored or co-authored by SLMMS members and supported by our Medical Society. All four of the SLMMS-sponsored resolutions were approved and adopted. Advocating for changes to support the practice of medicine is one of the most demonstrable ways that organized medicine benefits physicians; for those of you who were unable to attend, allow me to provide a summary of the SLMMS-sponsored resolutions. Thank you to those who provided testimony in support of our resolutions. Your actions help our society move medicine forward:

**Addressing Health Care Needs of Children of Incarcerated Parents**, co-authored by medical student members Shannon Tai of Saint Louis University School of Medicine, Samantha Lund and Craig Yugawa, both of Washington University School of Medicine, and three other Missouri medical students, this resolution was supported not only by SLMMS but also by the Boone County Medical Society, Greene County Medical Society and the Kansas City Medical Society. The modified substitute resolution was adopted, that the MSMA encourage the American Medical Association to support comprehensive and evidence-based care that addresses the specific health care needs of children with incarcerated parents and promote earlier intervention for those children who are at risk.

**Support for Bleeding Control Training in Schools**, introduced by medical student member Jane Hayes of Washington University School of Medicine, resolves that MSMA support legislation encouraging the training of high school students and teachers in life-saving bleeding control techniques. This resolution was adopted with a one-word modification to its title.

**Sexual Health Education in Missouri Public Schools**, co-authored by medical student members Sarah Cohen and Anna Holten of Washington University School of Medicine, resolves that MSMA support the implementation of age-appropriate, medically accurate comprehensive sexual health education that stresses the importance of abstinence in preventing unwanted teenage pregnancy and sexually transmitted infections, teaches contraceptive choices and safe sex, and integrates sexual violence prevention, including conversations about consent, and the social and economic impact of teen pregnancy, and further resolves that the MSMA opposes the sole use of abstinence-only based sex education. Following debate, this amended resolution was adopted.

**Abolishing Prior Authorization Requirements for Opioid Use Disorder Treatment**, introduced by Christopher Swingle, DO, resolves that the MSMA support legislation to abolish prior authorization requirements for FDA-approved generic medications for the treatment of opioid use disorders, and further resolves that MSMA support legislation to encourage that generic medications to treat opioid use disorders be reclassified to the lowest cost-sharing tier of a health plan's pharmacy benefit. This slightly amended version of Dr. Swingle's original resolution was adopted.

In addition, MSMA debated other resolutions addressing chronic traumatic encephalopathy; creation of a women's physician section; supporting common sense climate change legislation; the study of physician and trainee suicide by the Show-Me Compassionate Medical Education Project; and AMA delegate term limits. For a review of the actions taken and decisions made on these remaining resolutions, visit <https://www.msma.org/resolution-actions.html>.

In other business at this year's convention, SLMMS member George Hruza, MD, was nominated as MSMA president-elect for 2019-2020. Dr. Hruza will ascend to the state association presidency at the 2020 convention in St. Louis. David Pohl, MD, was elected to another term as MSMA treasurer. Robert Brennan, Jr., MD, and Inderjit Singh, MD, were both elected to another term to represent District 3 on the MSMA Council. Christopher Swingle, DO, was named to the MSMA Council to fill the unexpired term of Dr. Hruza. In addition, Elie Azrak, MD, was elected to another term as an AMA delegate from Missouri. We congratulate and thank these SLMMS members who so generously give of their time and continue to "move medicine forward."

### SLMMS Office Is "On the Move"

After 14 years in our present location on Craig Road in Creve Coeur, I'm thrilled to share with you that the SLMMS office will be moving later this summer. We recently signed a five-year lease on a new office space at 1023 Executive Parkway, in the Bellerive Office Park at Olive and Mason roads, just west of Barnes-Jewish West County Hospital. Our sublease partner, the Missouri Physicians Health Program, will be relocating with us in August.

We will be significantly reducing our expense by downsizing from just over 4,500 square feet to just under 2,000 square feet. As a result, SLMMS has a number of antique pieces and classic furniture from the old headquarters building on Lindell for which we will not have room in the new space. We would like to offer these items for purchase to our membership and the medical community through a sealed bid process. For a listing of items and additional information, please see the article on page 8. We invite you to own a small piece of St. Louis medical society history. Watch for more information on our relocation in the August issue of *SLMM*, and a future open house event in the new space sometime later this year. —

## Sam L. Page, MD, Appointed St. Louis County Executive



Dr. Sam L. Page

Longtime SLMMS member Sam L. Page, MD, promises to bring a fresh beginning to St. Louis County government as St. Louis County Executive. He was appointed to the position by the County Council on April 29 following the resignation of Steve Stenger, who has since pled guilty to federal corruption charges.

As chairman of the County Council, Dr. Page had been challenging many of the administration's questionable practices. On assuming the county executive position, he said, "Our county government has sorely lacked transparency and accountability. By being open about what we're doing and working cooperatively with others, we will work on restoring the faith our residents should have in county government.

"We also hope to bring a new sense of professionalism to county government by identifying industry best practices and requiring departments to set goals and identify a method to measure progress toward those goals. We have great county employees in county government. We need to empower them with training, mentoring, and support."

Dr. Page was a member of the County Council representing the 2nd District since 2014. He was elected Council chairman in 2017. He also has served for six years as a Missouri state representative. Dr. Page championed the establishment of the St. Louis County Prescription Drug Monitoring Program

which now covers over 80% of the Missouri state population. An anesthesiologist with Western Anesthesiology at Mercy Hospital St. Louis, he is taking temporary leave from his medical practice to serve as county executive.

**"By being open about what we're doing and working cooperatively with others, we will work on restoring the faith our residents should have in county government."**

Why is it important for medicine to have physicians serving in elected office?

Dr. Page commented: "Physicians choose a career for the opportunity to help patients one person at a time. In public service, we make decisions that help patients in large groups. Our training as advocates for our patients prepares us to advocate for our constituents.

"Many decisions made by elected officials impact our ability to care for our patients. Physicians are well prepared to make those decisions. If we are not part of the legislative process, others with different priorities and values will make decisions that could have a negative impact on our ability to care for our patients." —





# SLMMS Seeks Future Leaders

Again this year, the St. Louis Metropolitan Medical Society invites any prospective leaders from within the membership to volunteer to continue to move our organization forward and fulfill our mission.

The SLMMS Nominating Committee will meet this summer to consider candidates for leadership roles beginning in 2020. We need physicians from all specialties and practice settings to serve. Available positions include SLMMS councilors, delegates to the Missouri State Medical Association annual meeting, and appointments to SLMMS committees.

Your Medical Society recognizes that the time commitment is a concern many have when asked to serve. Please know that SLMMS leadership works hard to keep meetings to a minimum, and to meet via email or conference call when possible. We know physicians are busier than ever, but please consider the social and networking opportunities that also come with SLMMS leadership. Organized medicine benefits you, your profession, your practice and your patients.

To be considered as a potential nominee or a committee role, please contact Ravi Johar, MD, chair of the Nominating

Committee, at rkjohar@att.net or David Nowak, executive vice president, at the SLMMS office at 314-989-1014, ext. 105 or email dnowak@slmms.org no later than Monday, July 1. If you wish to nominate another member for a leadership position, please speak with them first to confirm their willingness to serve. All recommendations will be considered.

Per the Society's bylaws, the Nominating Committee will present its slate of officers and councilors at a General Society meeting on Tuesday, Sept. 10, at 6:00 p.m. to be held in the conference room of the West County Radiology Group office at 11475 Olde Cabin Road, Suite 200. All members are welcome to attend this meeting.

Candidates for office will be profiled in the October/November issue of *St. Louis Metropolitan Medicine*, and the annual election will take place online during the month of November. This is a great opportunity to provide leadership and direction to the Society to which you belong. It is also a chance to positively influence the future of medical practice. Thank you to those who are willing to consider serving and representing your fellow physicians and your profession. ➡

## Nominations Open for SLMMS Annual Awards

Nominations are now being accepted for special awards to be given by the St. Louis Metropolitan Medical Society for 2019. The awards will be presented at the Society's Annual Meeting and Installation Dinner on Saturday, Jan. 25, 2020. The Council invites the membership to nominate a physician colleague for one of the following awards:

### Robert E. Schlueter Leadership Award

The Schlueter Award is given, when appropriate, to a member who it is determined has met the following criteria: demonstrated leadership in organized medicine; demonstrated scientific attitude through excellent clinical practice; has been an advocate for patients on social, economic and political matters; and involved in community service on behalf of the medical profession. This is the highest honor bestowed by the Medical Society, and it has only been presented 20 times previously.

### Award of Merit

The Award of Merit is to be given, when appropriate, to recognize outstanding and distinguished contributions to scientific medicine in the St. Louis community. The nominee

must be a physician; preference will be given to current or former SLMMS members, but the nominee need not be a member of SLMMS.

### President's Award

The President's Award is for outstanding service to the medical profession by a member of the St. Louis Metropolitan Medical Society.

To submit a nomination for any of the three awards, provide a brief narrative (150-300 words) explaining why the nominee should be recognized; if possible, include the nominee's biographical sketch or curriculum vitae. Include contact information of the person submitting the nomination, and forward all materials to Dave Nowak, executive vice president, in the SLMMS office or email dnowak@slmms.org.

The deadline for nominations is Monday, July 1, 2019. All nominations will be reviewed by the SLMMS Nominating Committee in July, with a recommendation subject to final approval by the SLMMS Council in September. Award recipients will be notified this fall. ➡





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# Medical Society Antiques and Furniture Available for Purchase

In August, the SLMMS office will relocate to new space at 1023 Executive Parkway in Creve Coeur. To reduce expenses, SLMMS will trim our leased space by approximately 55% to just under 2,000 square feet. As a result, we will no longer have available space for several of the antique pieces of furniture that moved with us when the Society relocated from the old headquarters building on Lindell Boulevard in 2005.

In May, the SLMMS Council voted to offer these pieces for sale to our members and the medical community. The pieces have been appraised and the Medical Society will offer them for sale through a sealed bid process. If you are a collector or lover of antiques, or simply would like to own a piece of our

organization's history, we invite you to visit the office to view the items available for purchase.

The items will be available for viewing in the current SLMMS office at 680 Craig Rd., Suite 308, from Monday, June 17 through Wednesday, July 17, by appointment only. Please call Liz Webb in the SLMMS office at 314-989-1014 ext. 100 or email [lizw@slmms.org](mailto:lizw@slmms.org) to schedule a time. Sealed bids will be accepted through 5 p.m. on July 17. Winning bidders will be notified and must complete their purchase and remove any items no later than Wednesday, July 31, 2019. Winner bidders will be responsible for the move and transport of their items. Please contact the SLMMS office if you have any questions. ➡

## The following items are for sale:



1

- 1 Large cabinet with four upper shelves and three lower drawers; could be used as a bookcase or china cabinet. This item was a gift to the Society in memory of Dr. Alexander Mullen, Jr. (1856-1897) by his family. It is in excellent condition.



2



3



4



5



6

- 2-3 Four glass top specimen cabinets with lower drawers. Each cabinet has 12 lower drawers also with sliding glass tops. Originally housed in the Society's old medical library, these have been in storage and are in excellent condition.

- 4 One double antique bookcase (68 inches wide) with 10 lower shelves
- 5 One antique bookcase (36 inches wide) with glass doors; three upper shelves and one lower drawer
- 6 One dictionary stand (or large book stand)
- 7 Two Queen Anne high back chairs (with maroon upholstery)

- 7-8 Two end tables



7



8



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All indices are unmanaged and investors cannot actually invest directly into an index. Unlike investments, indices do not incur management fees, charges, or expenses.

This is a hypothetical example and is for illustrative purposes only. No specific investments were used in this example. Actual results will vary.

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# BrainWorks: Neuroscience on a Human Level

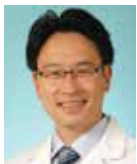
## WU physicians combine theater and video to create a unique public education experience

By Jim Braibish, St. Louis Metropolitan Medicine

Washington University neurosurgeons and Medical Society members Eric C. Leuthardt, MD, and Albert H. Kim, MD, PhD, are taking community education to a new dimension.



Dr. Eric C. Leuthardt



Dr. Albert H. Kim

Their *BrainWorks* program combines live theater with video animation and conversation to illustrate the human brain and how it activates in response to various life events. The first *BrainWorks* program was presented in December 2014 to sold-out audiences over two nights at The Sheldon. It has since been shown numerous times on the Nine Network television stations, including most recently in March 2019, as part of Nine's pledge drive programming. A second *BrainWorks* show is being developed and will be presented on three nights, July 19, 20 and 21, at the Loretto-Hilton Center for the Performing Arts on the campus of Webster University.

Both physicians are highly respected national leaders in neurosurgery and neuroscience. Dr. Leuthardt is professor of neurological surgery, neuroscience, biomedical engineering and mechanical engineering and materials science. He also is director of the Center for Innovation in Neuroscience and Technology and director of the Brain Laser Center. Dr. Kim is associate professor of neurological surgery, genetics, neurology and developmental biology and surgical director of the Pituitary Center.

In *BrainWorks*, actors join with Drs. Leuthardt and Kim to portray major life events. The first hour-long episode of *BrainWorks* follows a couple through courtship, marriage and the birth of their child, but also through the challenge of the husband having a brain tumor. The story is based on one of Dr. Leuthardt's actual patients, Brad Eastman and his wife Sarah. The actors and physicians play out character stories including doctor-patient interactions on stage. The doctors counsel the couple about the nature of the tumor and surgery needed.

After each performed scene, the show shifts to an on-screen animation showing the workings of the brain related to that scene, narrated by the physicians. There also are conversational segments between the doctors. The result is a fast-paced, lively and touching show.

"Albert and I want to help people learn more about the brain in a human, relatable way," Dr. Leuthardt explained. "We are built to be social creatures. Once you put something into a context where you can be part of the conversation, you will receive the information so much more deeply."

Dr. Kim added, "There is something very intimate, very engaging, very personal about using theater and storytelling to present this information."

While *BrainWorks* is entertaining, Dr. Kim said there is a serious purpose behind it: "As scientists, we have a responsibility to convey our knowledge in an accurate and clear way to the public. *Brain Works* is also a scientific calling."



Albert Kim, MD, standing left, and Eric Leuthardt, MD, standing right, observe and discuss life scenes being portrayed by actors at the 2014 *BrainWorks* performance.

An element of the show that illustrates their desire to relate to the audience is when one of the doctors declares, “Nerd check!” after the other begins to describe some aspect of the brain in medical terminology. Following the prompt, the first one then returns to speaking in more commonly understandable terms.

But, make no mistake, both Drs. Kim and Leuthardt more than hold their own in the medical research world where “nerd” language is the official means of communication. Dr. Leuthardt’s major research interests include neuroprosthetics and brain mapping. Dr. Kim’s research centers on the malignant abnormalities of brain cancer stem cells.

The idea for *BrainWorks* originated when Drs. Leuthardt and Kim were presenting lectures as part of the Barnes-Jewish Hospital community education series. “Our format was very dry, and we thought we could do better,” Dr. Kim said.

Dr. Leuthardt already was venturing into artistic expression by publishing two novels around artificial intelligence, *Limbo* and *Red Devil 4*. After ramping up the community education lecture to a TED talk format, they decided to create the play. The two physicians wrote the screenplay with some help from an outside writer and developed the digital media content. BJC HealthCare staff helped with much of the production, and KETC-TV joined to create the video of the show. *BrainWorks* won a 2016 Mid-America Emmy Award for best instructional program.

The coming *BrainWorks* in July will take the show to a higher level, Dr. Leuthardt said. This show will have four stories covering ordinary, sometimes happy and sometimes tragic experiences. “The graphics will be spectacular,” he said.

The 2014 *BrainWorks* show can be viewed on the Nine Network website at: <https://video.ninenet.org/video/nine-network-specials-brain-works/>

Drs. Kim and Leuthardt also have produced 17 episodes of a podcast, Brain Coffee. Find the podcast at: <https://www.barnesjewish.org/The-Brain-Coffee-Podcast> —

## BrainWorks 2019

### Dates

Friday, July 19 - 7 p.m.  
Saturday, July 20 - 7 p.m.  
Sunday, July 21 - 2 p.m.

### Location

Loretto-Hilton Center for the Performing Arts Campus  
of Webster University

### Information and Tickets

[www.barnesjewish.org/Neurology-Neurosurgery/BrainWorks](http://www.barnesjewish.org/Neurology-Neurosurgery/BrainWorks)

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# Artificial Intelligence and the Future of Medicine

## How big data could change health care

By Julia Evangelou Strait

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Washington University researchers are working to develop artificial intelligence (AI) systems for health care, which have the potential to transform the diagnosis and treatment of diseases, helping to ensure that patients get the right treatment at the right time.

In a “Viewpoint” article published Dec. 10 in the *Journal of the American Medical Association (JAMA)*,<sup>1</sup> two AI experts at Washington University School of Medicine discussed the best uses for AI in health care and outlined some of the challenges for implementing the technology in hospitals and clinics.



Dr. Philip Payne



Dr. Thomas M. Maddox

Philip Payne, PhD, is the Robert J. Terry Professor and director of the Institute for Informatics, and Thomas M. Maddox, MD, is a professor of medicine and director of the Health Systems Innovation Lab, launched in 2017 as a partnership between the School of Medicine and BJC HealthCare. The lab is aimed at developing innovative ways to deliver care and improve people’s health.

In health care, artificial intelligence relies on the power of computers to sift through and make sense of reams of electronic data about patients—such as their ages, medical histories, health status, test results, medical images, DNA sequences and many other sources of health information. AI excels at the complex identification of patterns in these reams of data, and it can do this at a scale and speed beyond human capacity. The hope is that this technology can be harnessed to help doctors and patients make better health care decisions.

Drs. Payne and Maddox answered questions about AI, including its capabilities and limitations, and how it might change the way doctors practice.

### Where are the first places we will start to see AI entering medical practice?

**Dr. Maddox:** One of the first applications of AI in patient care that we currently see is in imaging, to help improve the diagnosis of cancer or heart problems, for example. There are many types of imaging tests—X-rays, CT scans, MRIs and echocardiograms. But the underlying commonality in all those imaging methods is huge amounts of high-quality data. For AI to work well, it’s best to have very complete data sets—no

missing numbers, so to speak—and digital images provide that. Plus, the human eye is often blind to some of the patterns that could be present in these images—subtle changes in breast tissue over several years of mammograms, for example. There has been some interesting work done in recognizing early patterns of cancer or early patterns of heart failure that even a highly trained physician would not see.

**Dr. Payne:** In many ways, we already have very simple forms of AI in the clinic now. We’ve had tools for a long time that identify abnormal rhythms in an EKG, for example. An abnormal heartbeat pattern triggers an alert to draw a clinician’s attention. This is a computer trying to replicate how a human being understands that data and says, “This doesn’t look normal, you may need to address this problem.” Now, we have the capacity to analyze much larger and more complex sources of data, such as the entire electronic health record and perhaps even data pulled from daily life, as more people track their sleep patterns or pulse rates with wearable devices, for example.

### What effect will this have on how doctors practice medicine?

**Dr. Payne:** We think it’s important to emphasize that these tools are never going to replace clinicians. These technologies will provide assistance, helping care providers see important signals in massive amounts of data that would otherwise remain hidden. But at the same time, there are levels of understanding that computers still can’t and may never replicate.

**Dr. Maddox:** To take a treatment recommendation from an AI, even an excellent recommendation, and decide if it’s right for the patient, is inherently a human decision-making process. What are the patient’s preferences? What are the patient’s values? What does this mean for the patient’s life and for his or her family? That’s never going to be an AI function. As these AI systems slowly emerge, I think we may start to see the roles of physicians changing—in my opinion, in better ways. Doctors’ roles may shift from being data collectors and analyzers to being interpreters and counselors for patients as they try to navigate their health.

**Dr. Payne:** That means we need to think about new ways to train physicians and other care providers as these systems come into medical practice. We want the humans in our health care



system doing the things that humans are uniquely suited to do, such as interpreting and counseling, as Tom described. And the computers in the system doing the things that computers are uniquely suited to do, such as collecting, filtering and analyzing large amounts of complex data. And those two things are complementary.

### **What regulatory issues—especially related to privacy—need to be addressed for AI?**

**Dr. Payne:** As medicine is practiced now, there are moral, ethical and privacy contracts that already exist between health care providers and their patients. If we can find a way to fully reflect those existing contracts from a technical standpoint, we'll be in a good position. They provide guideposts.

**Dr. Maddox:** It's an extension of the Hippocratic oath. There is privacy already inherent in the provider and patient relationship. Privacy requires two things: The first is the mechanics of protecting data, and the second is the establishment of trust. It's incumbent on us to preserve that trust.

**Dr. Payne:** There's a lot of talk about the ethics of data stewardship and whether there is a need for the equivalent of a Hippocratic oath for the people charged with protecting and using patient data appropriately. There is a moral and ethical contract that involves not only protecting patient privacy but making sure that information is used responsibly and in order to make the health care system better. There's a duty that people charged with doing so accept as part of their professions. Building systems to analyze data in health care is not the same as building systems that manage logistics when someone orders something online. The stakes are much higher, and it is important to acknowledge this difference.

### **Imagine AI is fully integrated into your practice. How might it change your day-to-day routine?**

**Dr. Maddox:** I'm a cardiologist. Typically, patients I see include those who may have had a heart attack, or patients who are dealing with heart failure. Traditionally, we monitor these patients by having them come to our cardiology clinic for follow-up visits. For example, I might have a patient come and see me every six months. But this follow-up time period is basically chosen at random—there's no specific medical reason for it.

With AI, in theory, I would no longer schedule these standard follow-up appointments. Instead, I would review the integrated, AI-analyzed, data streams of my thousand-patient practice every day. The AI algorithms would integrate multiple data streams that can paint a picture of my patients' cardiac health on any given day. For example, I could see my patients' activity levels measured by their wearable devices, their medication

**The hope is that this technology can be harnessed to help doctors and patients make better health care decisions.**

adherence patterns from pharmacy data, their breathing and pulse rates from their home-based sensors, their weight fluctuations from their "smart" scale, their exposure to air pollution from environmental sensors, and recent ER visits from their electronic medical record.

Taking all that together, the AI could identify any patients who are at high risk for cardiac problems. From a heart-attack risk point of view, there might be a patient who is a smoldering fire, so to speak, and the system prompts me and my team to reach out to that patient for an appointment as soon as possible. For the remainder of my cardiac patients who don't have any current high-risk features, then there would be no need for them to come to my clinic. We would just continue to monitor them remotely and be available for any problems.

**Dr. Payne:** What Tom just described is a smart health care system—where the consumption of health care is driven by actual need. In his example, the AI sorted through a massive amount of different kinds of data and pulled out the one patient he needed to see and interact with. Some of the best ways to reduce health care costs and improve health care outcomes will be to eliminate the care that patients don't need.

Right now, the challenges we need to address as we try to bring AI into medical practice include improving the quality of the data that we feed into AI systems, developing ways to evaluate whether an AI system is actually better than standard of care, ensuring patient privacy and making sure not only that AI doesn't disrupt clinical work flow but in fact improves it. But if we do our jobs right and build these systems well, much of what we have described will become so ingrained in the system, people won't even refer to it separately as informatics or AI. It will just be medicine. ■

*Julia Evangelou Strait is a senior medical sciences writer for Washington University School of Medicine.*

#### **Reference**

1. Maddox TM, Rumsfeld JS, Payne PRO. JAMA Viewpoint: Questions for AI in healthcare. *JAMA*. Dec. 10, 2018.

# An Introduction to Artificial Intelligence

**A**rtificial intelligence is said to be the next big wave of change, impacting our lives as much as the internet and the smart phone. The following non-technical overview of artificial intelligence is condensed from content on the website of SAS Institute, a consulting firm.<sup>1</sup>

Artificial intelligence (AI) makes it possible for machines to learn from experience, adjust to new inputs and perform human-like tasks. Most AI examples that you hear about today—from chess-playing computers to self-driving cars—rely heavily on deep learning and natural language processing. Using these technologies, computers can be trained to accomplish specific tasks by processing large amounts of data and recognizing patterns in the data.

## What Does Artificial Intelligence Do?

- **AI automates repetitive learning and discovery through data.** But AI is different from hardware-driven, robotic automation. Instead of automating manual tasks, AI performs frequent, high-volume, computerized tasks reliably and without fatigue.
- **AI adds intelligence** to existing products. In most cases, AI will not be sold as an individual application. Rather, products you already use will be improved with AI capabilities, much like how Siri was added as a feature to a new generation of Apple products.
- **AI adapts through progressive learning algorithms** to let the data do the programming. AI finds structure and regularities in data so that the algorithm acquires a skill: The algorithm becomes a classifier or a predictor. So, just as the algorithm can teach itself how to play chess, it can teach itself what product to recommend next online.
- **AI analyzes more and deeper data** using neural networks that have many hidden layers. Building a fraud detection system with five hidden layers was almost impossible a few years ago. All that has changed with incredible computer power and big data.
- **AI achieves incredible accuracy** through deep neural networks—which was previously impossible. For example, your interactions with Alexa, Google Search and Google Photos are all based on deep learning—and they keep getting more accurate the more we use them.
- **AI gets the most out of data.** When algorithms are self-learning, the data itself can become intellectual property. The answers are in the data; you just have to apply AI to get them out.

## How Does Artificial Intelligence Work?

AI works by combining large amounts of data with fast, iterative processing and intelligent algorithms, allowing the software to learn automatically from patterns or features in the data.

- **Machine learning** automates analytical model building. It uses methods from neural networks, statistics, operations research and physics to find hidden insights in data without explicitly being programmed for where to look.
- **A neural network** is a type of machine learning that is made up of interconnected units (like neurons) that processes information by responding to external inputs, relaying information between each unit. The process requires multiple passes at the data to find connections and derive meaning from undefined data.
- **Deep learning** uses huge neural networks with many layers of processing units, taking advantage of advances in computing power and improved training techniques to learn complex patterns in large amounts of data. Common applications include image and speech recognition.
- **Cognitive computing** is a subfield of AI that strives for a natural, human-like interaction with machines. Using AI and cognitive computing, the ultimate goal is for a machine to simulate human processes through the ability to interpret images and speech—and then speak coherently in response.
- **Computer vision** relies on pattern recognition and deep learning to recognize what's in a picture or video.
- **Natural language processing (NLP)** is the ability of computers to analyze, understand and generate human language, including speech.

## What Are the Challenges of Using Artificial Intelligence?

Today's AI systems are trained to do a clearly defined task. The system that plays poker cannot play solitaire or chess. The system that detects fraud cannot drive a car or give you legal advice. In fact, an AI system that detects health care fraud cannot accurately detect tax fraud or warranty claims fraud.

Likewise, self-learning systems are not autonomous systems. The imagined AI technologies that you see in movies and TV are still science fiction. But computers that can probe complex data to learn and perfect specific tasks are becoming quite common. ➤

### Reference

1. Artificial Intelligence: What it is and why it matters. SAS Institute. [https://www.sas.com/en\\_us/insights/analytics/what-is-artificial-intelligence](https://www.sas.com/en_us/insights/analytics/what-is-artificial-intelligence).

# Artificial Intelligence for Fall Prevention


**A**rtificial intelligence is being used to prevent falls among senior citizens through a pair of products developed by VirtuSense Technologies of Peoria, Ill.

Both VirtuSense products are equipped with a video camera and an infrared sensor that assess and monitor the patient's movements. This data is compared to the system's national database of patients, as well as previous data on the patient, to identify subtle patterns that data has shown lead to falls. The systems are designed for use by hospitals, rehabilitation centers and nursing homes.

- VSTBalance assesses the patient's gait, balance and function and identifies possible risks for falls. It also can be used to teach patients how to improve their muscular movements.
- VSTAlert provides 24/7 monitoring of inpatients. It can alert staff to patient activity that could precede a fall. It also can be used to prevent pressure ulcers by monitoring postural shifts.

"By using AI, we can identify problems before they happen and get patients the care they need to avoid or mitigate falls, musculoskeletal disorders and bedsores," said Deepak Gaddipati, chief technology officer of VirtuSense. He gave a presentation on the products during an April 11 innovation conference in St. Louis.

Learn more at [www.virtusensetech.com](http://www.virtusensetech.com).



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# What Makes EHR So Stressful? SLMMS Members Weigh In

## Member poll reveals aspects of EHR where improvement is most needed

**S**tudies from the American Medical Association and others have documented that electronic health records systems are a major source of physician stress and burnout. But just what is it about these systems that cause physicians so much frustration?

The Medical Society conducted a member poll in April to find out your insights. A total of 82 responses were received; since not all respondents use an EHR, a total of 62 EHR users completed the survey.

The most commonly used system is Epic, with 69% of respondents. Other systems mentioned more than once include eClinical Works, Allscripts and Modernizing Medicine.

Major findings:

- 27% agreed with the statement, “I’m frustrated using my EHR; it adds much stress to my day.” Another 56% said the EHR adds some stress.
- 66% disagreed with the statement, “The EHR is appropriately designed and organized to optimize medical care.”
- 75% identified “time required for data entry” as an element of the EHR causing the most problems. Other problematic areas indicated were “interoperability with other systems,” 46%; “screen organization does match with clinical workflow,” 39%; and “cumbersome templates,” 37%.
- Only 35% said their systems had become easier to use in the past five years.

The systems clearly have a lot of room for improvement. Your comments, selections of which are shown following, were insightful about physician concerns.

### Complex and cumbersome:

*The organization and layout are not intuitive for how physicians think or enter information. Also, there is no way (or it has never been shown to me) to alter the layout to make it conform to how I work. It takes as long, or longer, to find the information I need than to act upon it.*

*There is too much carryover data making the records difficult if not impossible to read, and the important data is basically lost.*

*I have to enter countless useless entries that do not improve patient care.*

*Not customizable enough. Too much clutter making it hard to find the things you use most frequently.*

*Difficult to find the most relevant issues when reviewing charts.*

*Glaucoma test results are difficult to view. Cannot open side by side to compare over time.*

*When requesting a single pathology document from another EHR system, I get 42 pages of redundant worthless information.*

*Epic has made the process more dangerous by overwhelming me with faxes that used to be sent separately. I have over 200 in my in basket and more every day. Important information will be missed.*

*Frequency of updates and how they change workflow.*

*Too cumbersome. Not intuitive or user friendly.*

*Times that it breaks down.*

*At least two extra hours per night of charting to document effectively and stay caught up.*

*The poor functionality of these systems certainly contributes to longer work days and more physician burnout.*

### Too many clicks to complete task and slow loading times:

*Takes way too much doctor data entry time and too many clicks.*

*Takes many clicks to even get to opening screens, and load times are very slow. Depending on how many times you have to log into EHR, PACS and email per day, you could easily spend over 30 minutes each day just entering passwords and waiting for the various programs to load.*

*Have to click through many screens and know the eccentricities of the system to access what you need.*

### Designed for billing and insurance:

*It really is designed for billing. It’s all about putting in appropriate codes instead of focusing on the patients’ clinical issues. It does not truly reflect the length and complexity of patient care.*

*Designed to optimize billing, not patient care.*

### Less face time:

*I spend more time on the computer than in direct patient contact, which is demoralizing and wasteful of my time. The EHR is the biggest source of physician burnout now as it takes us away from the main reason we went into medicine—patient care!*

*Huge amount of time wasted. Less time for patient interaction.*

*It diverts time away from patient care.*

*You cannot be a good doctor and a good transcriptionist and data entry clerk at the same time.*

*I hate EMR but it is not the EMR itself, it is the black box that separates the physician from the patient.*

### Lack of interoperability:

*Interoperability is a joke. Epic has different “flavors” from hospital to hospital, even within same hospital system.*

*ALL EMRs should speak to each other.*

*Need interoperability.*

### Shortage of training:

*If the system is upgraded, it's expected that I take time out to learn what's new on a foundation of already minimally functional knowledge. Every other software product has tutorials and plenty of YouTube videos for self-learning, but this is painfully lacking in EHR products.*

In conclusion, while many physicians have grown more accustomed to using an EHR, it is still a source of tremendous frustration and a major contributor to burnout. Some doctors cite advantages in that it eliminates paper and makes them more efficient, but in general most physicians feel the EHR system they use is better suited to enhancing billing and coding, and less inclined to improve patient care. ■

## FORTUNE, KAISER HEALTH HIGHLIGHT EHR PROBLEMS

In a report in the March 18, 2019, *Fortune* magazine, entitled “Death by a Thousand Clicks,” *Fortune* and Kaiser Health News describe physician concerns and instances of system errors with electronic health records.

According to the investigation, there have been thousands of reports of deaths, serious injuries and near misses tied to software glitches, user errors or other system flaws. An example is an EHR that did not transmit the physician's order for a head scan, so the patient never received it and died two months later of a brain aneurysm.

Interoperability has failed to materialize, largely because officials allowed hundreds of competing firms to sell medical records software unable to exchange information, the investigation concluded.

Physician burnout is a major concern, which in January the Harvard T.H. Chan School of Public Health and the Massachusetts Medical Society called a “public health crisis.”

Some data cited in the report:

- 3,243 medication errors were linked to EHR-usability issues at three pediatric hospitals from 2012 to 2017, according to a *Health Affairs* study.
- 5.9 hours is the average time doctors spend on EHRs each day, compared with 5.1 hours spent with patients, according to a 2017 study in the *Annals of Family Medicine*.
- An ER doctor makes approximately 4,000 computer clicks over the course of a single shift, according to a study published in the *American Journal of Emergency Medicine*.

**The full report can be read at <https://khn.org/news/death-by-a-thousand-clicks/>.**

## News Briefs

- **Prior Authorization Legislation Passed:** The Missouri Legislature approved legislation advocated by the Missouri State Medical Association and supported by SLMMS to reform insurance company practices regarding prior authorization. The bill awaits the governor's signature. (SB 514)
- **MAT Waiver Training:** The training program to obtain a Medication Assisted Therapy (MAT) waiver to prescribe buprenorphine for opioid use disorder will be held on Saturday, Aug. 10, from 8:30 a.m. to 12:30 p.m. at the Sheraton Westport Plaza Hotel, presented by SLMMS Council member Luis Giuffra, MD. Learn more and register: <https://www.mocoalition.org/medication-assisted-treatment>.



**Medical Society members enjoyed an entertaining presentation on burnout and stress by Nicole Harms during a May 22 program presented by SLMMS and the League of Healthcare Experts.**

# The Many Pitfalls of Electronic Medical Records (EMR)

## What should a physician do when medical records are requested?

By Lisa Howe and Alejandro Valdez

Litigation is an unfortunate component of the practice of medicine. Lawsuits will inevitably generate requests for medical records. For many years, physicians who received requests for medical records would ask their office manager/secretary to pull the paper chart, make a copy of the paper chart, and send the chart to the requesting attorney. Oh, the simpler times.

Electronic medical records, also synonymously referred to as electronic health records, on the surface sound wonderful. It is easy for everyone to read the medical records, they allow medical professionals to progress through tabs to ensure that they are asking important questions relating to the patient's medical history, and they allow medical professionals to access the records remotely, promoting continuity of care across provider platforms. While electronic medical records carry many benefits, they may also land you in legal trouble when not handled correctly.

As medical malpractice attorneys, we often see our clients make several common mistakes when they respond to requests for medical records. Ignoring these pitfalls will cause a physician many more headaches in the long run. In this article, we will identify what a physician should do when medical records are requested, and we will explain the many pitfalls that can occur when physicians do not follow these steps.

### Cutting and Pasting Is Not Your Friend

Remember the good old days when physicians were picked on for bad handwriting? Well, those days are gone. That is the one great thing about electronic medical records: Everyone can read

them. However, a problem with electronic medical records is that while they are easier to read than traditional paper records, they tend to show a lot of drop-down information from previous visits with patients. This gives the appearance that the physician cut and pasted a lot of information from visit to visit. In this way, the printed form of electronic medical records can distort your charting to make your documentation appear lazy. Be aware of this, and make sure to be clear in your medical records of what you examine and evaluate at each visit.

### Stop Everything ... Call Your Attorney

When an attorney is making a request for medical records of your patient, it is most likely because the patient is considering filing a lawsuit. Therefore, the first thing you should do is contact your attorney and insurance company. That will put the insurance company on notice that there has been a request for records. Further, the attorney can make sure you provide the entire medical chart of the patient, without providing information that has not been requested or that should not be sent to an attorney, since it is not really part of your patient's chart. Many of the pitfalls of electronic medical records can be avoided if the physician's attorney and insurance company are notified first.

### Avoid the "Print Medical Records" Tab

Almost all physicians we come across believe that hitting the print button from the electronic medical record system will cause the entire medical chart of the patient to be printed. However, that is absolutely not what occurs. Why does it matter? It matters a lot when a patient decides to sue the physician and claims the physician purposefully did not send the patient the **full and complete medical chart**. We have had many situations where a physician we represented sent medical records to a patient's attorney by hitting the "print medical records" tab on their electronic medical records system, only to find out later, that the system did not print out many important records, such as the medications prescribed by the physician, etc. This causes a lot of heartache when the physician is in the middle of a lawsuit.

Usually, the physician hands over an affidavit (probably signed by the physician's staff) stating the medical records are complete, true and accurate copies of the patient's medical chart. However, that affidavit is not accurate and can be held against the physician and corporation in a lawsuit. Another pitfall is



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*The firm's website is [www.eckenrode-law.com](http://www.eckenrode-law.com).*





While electronic medical records carry many benefits, they may also land you in legal trouble when not handled correctly.

when a physician has a paper chart and an electronic medical record, but only sends the requesting attorney the electronic medical record and not the paper chart. Then the attorney is still not receiving the entire medical record of the patient.

#### **Screen Shots Are Your Friend**

When a physician we represent is sent discovery in a lawsuit and medical records are requested, we do not leave it to the physician to send the entire medical chart due to the problems mentioned above. We, as diligent attorneys, go to the physician's office and go through every single tab on the computer and have the physician's staff print screen shots of every single tab and possible area that can be seen on the computer. This way, we know we are receiving the entire medical chart of the patient. While this process may be somewhat burdensome, it is imperative that we have all the records and that the entire chart is being produced in discovery according to state and/or federal law.

We cannot leave it to a physician's support staff to make sure that we obtained the entire medical chart. For example, we have a client that we ask for the medical records. We get some of the medical records, and then we have to ask for specific things, such as orders, CNA records, therapy records, etc. When we get records in bits and pieces, we end up providing the records in bits and pieces to the patient's attorney. The patient's attorney inevitably thinks the physician is lying or trying to hide something. If the attorney receives the entire chart the first time, then this would not be an issue.

#### **Patients Are Individuals**

Electronic medical records rely completely on tabs with scripted jargon to convey a patient's signs and symptoms, yet patients are individuals and may not always present with a scripted set of symptoms. Physicians and health care providers may be forced to click on the best available option instead of providing

a 100% accurate narrative of the patient's condition. This can lead to misinterpretation of the record in future reviews and may compound a patient's suffering by leading a physician or health care provider toward an incorrect diagnosis. Rather than providing a crisp, clean health record, these pre-selected descriptions for signs and symptoms can present more questions than they answer.

#### **Big Brother Is Watching When You Log On**

Physicians and support staff must always be aware that every time they log onto a patient's electronic medical record, there is an audit trail. An audit trail is a security-relevant chronological record that provides documentary evidence of, among other events, who accessed an electronic medical record system, when they accessed it, from where, and exactly what they did, such as enter new data, modify existing charts, etc.

While an audit trail can sometimes be very helpful, it may also hurt a physician who is being sued. Let's say a physician adamantly claims he/she never received an X-ray report. The physician is positive about it. The physician gets sued and is deposed and says he never received an X-ray report. Then the patient's attorney in discovery asks for the audit trail, which they are entitled to obtain under the rules of discovery. The audit trail could show that the physician did receive the X-ray report and reviewed it. Such a scenario could obviously be very detrimental to the physician's case. It is important to advise your staff about the existence of the audit trail.

#### **Conclusion**

In conclusion, there are many pitfalls to electronic medical records. However, there are ways that physicians and their staff can avoid the pitfalls, or at least reduce the problems associated with electronic medical records. The best advice we can give is to always consult your attorney prior to sending the medical records out to another attorney requesting the records. ■

# Increasing Utilization of Non-Traditional Patient Care Sites: Opportunities for Physicians

By Todd A. Zigrang, MBA, MHA, FACHE, CVA, ASA & Jessica L. Bailey-Wheaton, Esq.

According to a new white paper by FAIR Health, an independent nonprofit company that manages and analyzes the nation's largest database of privately billed health insurance claims, telehealth utilization increased 53% from 2016 to 2017—the largest increase of all health care settings examined.<sup>1</sup>

Telehealth is often considered one of the most “disruptive forces” in health care, as it can transition care from the hospital campus (including on-campus physician offices) to a patient's home or other location.<sup>2</sup> In addition, utilization of other non-traditional sources of care, including retail clinics, urgent care centers and ambulatory surgery centers, were found to have also increased over the same timeframe.<sup>1</sup>

## Factors Influencing Utilization

As the health care sector continues to be influenced by the rise in American consumerism, i.e., patients seeking health care in relation to cost and quality, and the value of more convenient care, the utilization of non-traditional health care settings such as telehealth will inevitably continue to grow.<sup>3</sup> This growth will likely lead to traditional health care providers rapidly transforming their practices in order to compete and meet the demands of their patients.

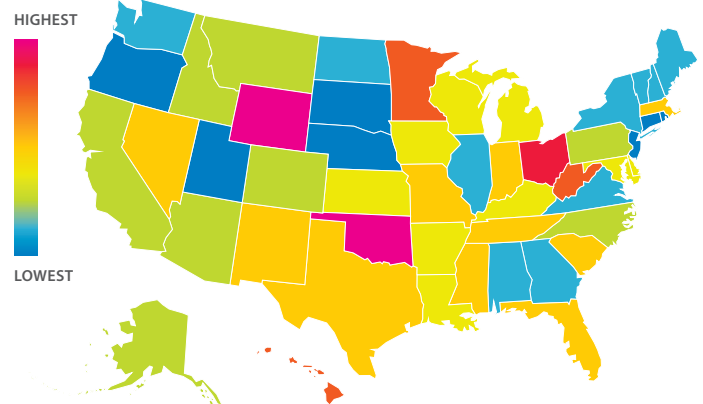
Recent research published in the *Journal of the American Medical Association* confirms FAIR Health's observation of a large increase in telehealth use by the commercially insured population, finding that most visits were for either tele-mental health or primary care telemedicine.<sup>4</sup> The rapid increase in

telehealth utilization is likely due to it often being a cheaper and more convenient method by which patients can access health care providers.

Influencing this trend are consumers of all ages (but especially younger patients) who are demanding convenience, affordability and quality in their health care. As a result, patients are opting for non-traditional services/sites, such as virtual care and retail clinics.<sup>5</sup> According to a 2019 survey, approximately 53% of patients are more likely to use a provider offering remote or tele-monitoring devices, up from 39% in 2016.<sup>5</sup>

In examining the geographic dispersion of telemedicine, the FAIR Health white paper compared telehealth claim lines across sites, and found Missouri to have an average number of claims compared to other states (Fig. 1).

**FIG. 1: PERCENT OF CLAIM LINES WITH TELEHEALTH USAGE COMPARED TO ALL MEDICAL CLAIM LINES, 2017**



Source: FH Health Care Indicators and FH Medical Price Index 2019.<sup>1</sup>



Todd A. Zigrang

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Of note, the JAMA study found that tele-mental health service utilization increased “significantly faster” in those counties that had no psychiatrists and in states that had comprehensive parity mandates in place. Other types of specialty care were not commonly utilized in the telemedicine space. In contrast to tele-mental health growth, primary care telemedicine growth was not associated with either the supply of primary care physicians or the existence of parity laws. However, primary care telemedicine utilization did grow significantly in 2016-2017 (as noted above) once “direct-to-consumer” telemedicine insurance coverage expanded.<sup>4</sup>

## Exploring New Opportunities

This patient shift toward non-traditional sites of care may serve as an opportunity for physicians seeking to ensure the sustainability of their practices long term. Research such as the FAIR Health and JAMA studies discussed above can inform physicians as to the specialties, locations and utilization drivers of various sites of services. Such research indicates that non-traditional services, such as telemedicine and concierge medicine, may be of particular interest to physicians.

Telemedicine may be defined as “the use of medical information exchanged from one site to another via electronic communications to improve a patient’s clinical health status.”<sup>6</sup> This generalized definition encompasses a vast array of patient care tactics, including virtual visits and procedures, remote patient monitoring, pharmaceutical prescribing, laboratory sample evaluation, and so on. While telemedicine practice may currently be difficult from a reimbursement perspective, as payors (Medicare in particular) do not pay for all types of telemedicine visits, it offers both physicians and patients flexibility (in terms of time and location) and may allow physicians who are so inclined to expand the scope and/or size of their practices without increasing overhead expenses.<sup>7</sup> Telemedicine may also be utilized by physicians either as the primary practice, or as a complementary service to an established brick-and-mortar practice.

For primary care physicians seeking to capitalize on the growing emphasis on patient convenience, concierge medicine may be another possible model to pursue. *Concierge medicine* is typically structured as a membership model, where the physician is paid a monthly/annual fee (or a retainer) to provide 24/7 access, same-day appointments and longer face time with patients. This model has been growing steadily over the past 15-plus years, and may be an ideal arrangement for physicians who prefer to operate as a solo practitioner. The concierge model also allows physicians to take advantage of the current

reimbursement environment as physicians can still bill third-party payors for patient visits (in addition to charging patients for the concierge membership fee).<sup>8</sup>

There is no doubt that the most recent iteration of the health care delivery system is moving patient care away from the hospital campus (including on-campus physician offices) to more non-traditional sites of care. While some physicians may perceive this shift as a threat, others may recognize these utilization trends as an opportunity to employ technological advancements and provide patient care in a way that not only is convenient for the patient, but is also advantageous for the physician. These will allow the physician to be at the forefront of these health care advancements while focusing more acutely on the provision of patient care and population health management. ◀

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## HARRY’S HOMILIES®

Harry L.S. Knopf, MD

## ON TECHNOLOGY

In today’s modern “tech” world,  
are we chained to our computers  
or by our computers?

I don’t think anyone will argue with the importance of the computer for a plethora of tasks. Certainly, medical records are now more accessible and transferrable. Someone who becomes ill anywhere in the world can be treated by a physician who can read the patient record online from thousands of miles away. But is this ability attained at a cost? First there is the time to enter data. Does this take us away from face-to-face discussion with our patients? Next there is data security: If you can see the record, who else is looking? And finally, is there a chance the computer will take control of us? There have been scary sci-fi movies about AI (artificial intelligence) for years. But is it fiction? So much to consider as you peruse this month’s issue of *St. Louis Metropolitan Medicine*. Perhaps AI will be benevolent ... or NOT. ▶

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*Dr. Knopf is editor of Harry’s Homilies.® He is an ophthalmologist retired from private practice and a part-time clinical professor at Washington University School of Medicine.*

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# Taking a Proactive Approach to Your Medical Practice's Cybersecurity



## Prevention is the best medicine

By Ryan Haislar

**Y**ou most likely make the following recommendations to your patients countless times per day: exercise regularly, eat a healthy diet, get enough sleep and take steps to reduce stress. When these healthy habits are practiced consistently, there is an overall increase in the quality of life along with a decreased risk of chronic health problems such as heart disease and type 2 diabetes.

As Benjamin Franklin said, “An ounce of prevention is worth a pound of cure.” The best-case scenario is to prevent a disease, not to treat a disease once it develops. However, helping patients to understand their condition and then implement simple lifestyle changes is much easier said than done.

### Proactive Approach to Cybersecurity Is Critical for All Medical Practices

Similarly, when a medical practice is faced with additional costs for cybersecurity, there is no immediate, measurable benefit of that investment, only a hope of preventing a future, negative outcome—falling victim to a cyberattack.

The U.S. Department of Health and Human Services noted in a recent publication that \$6.2 billion was lost by the U.S. health care system in 2016 as a result of data breaches and four out of five physicians in the United States have experienced some form of cyberattack. The average cost of a data breach for a health care organization is now \$2.2 million.

The data clearly shows that without preventive cybersecurity measures in place, it's not a question of *if* your medical practice will fall victim to some variant of malware, it's a question of *when*.

### The Costs of NOT Investing In Cybersecurity for Your Practice

A single cyberattack can cost you thousands of dollars in emergency restoration fees, days of downtime (the average being 10-14 days) and the nightmare of dealing with a HIPAA violation. If any files or patient records are corrupt and/or deleted, there will be even more costs incurred to address the situation.

Your practice will come to a grinding halt, patients won't be seen, you won't have access to patient records, and even the billing won't get done. Your practice will be hemorrhaging money.

### What Is the Prescription to Protect Your Medical Practice from Cybersecurity Risks?

Unfortunately, there is no “magic cure” guaranteed to prevent your practice from falling victim to a cyberattack. But we have been very successful in protecting our clients from cyberattacks with a multi-layered cybersecurity strategy that works to form a sophisticated level of protection from many different malware variants. And, while there is a cost to these enterprise-level security layers, they are surprisingly quite affordable for any size of practice. Putting these preventative measures in place may just save your practice from financial catastrophe and should certainly help you sleep better at night.

Bottom line: Have a conversation with your IT team or your IT provider about cybersecurity, and prepare to invest in cybersecurity protections to maintain the health and profitability of your medical practice. ■



Ryan Haislar

*Ryan Haislar is vice president of Computerease, a family owned and operated, full-service IT company that specializes in serving independent medical practices in the St. Louis area. He can be reached at [ryan@computer-service.com](mailto:ryan@computer-service.com).*

*Members of Greater St. Louis MGMA contribute articles to each issue of St. Louis Metropolitan Medicine through their partnership with the Medical Society. To learn more about Greater St. Louis MGMA, visit [www.mgmastl.org](http://www.mgmastl.org).*

# Promoting Medicine, Health Careers for Young Women

As part of an effort to encourage young women to choose careers in medicine and health, Alliance members are presenting awards to juniors at several area high schools for their STEM projects related to health and medicine. Pictured, Sue Ann Greco, left, and Sandra Murdock, right, present awards to St. Joseph's Academy students Emma Mueller, Katie Kostecki, Sydney Hilker, Kara Greger and Margie Lodes. —



## — OBITUARIES —

### Robert J. Burke, MD



Robert J. Burke, MD, a pediatrician, died March 24, 2019, at the age of 96.

Born in Cincinnati, Ohio, Dr. Burke received his undergraduate degree from Xavier University and his medical degree from Saint Louis University.

He completed an internship at SSM Health St. Mary's Hospital and his residency in pediatrics at Saint Louis University Hospital. Dr. Burke served in the U.S. Navy during World War II. He was on staff at SSM Health Cardinal Glennon Children's Hospital, Mercy Hospital St. Louis, Mercy Hospital South, SSM Health St. Mary's Hospital, St. Luke's Hospital and Missouri Baptist Medical Center. He was also on the faculty at Saint Louis University. Dr. Burke joined the St. Louis Metropolitan Medical Society in 1951.

Dr. Burke was predeceased by his wife, Elizabeth Burke. SLMMS extends its condolences to his children: Vince Burke, Barb Giancola, Greg Burke, Maureen Riffle, Annie Bauer, and Stephanie Burke; and his 11 grandchildren. —

### Gerald N. Wool, MD



Gerald N. Wool, MD, a pediatrician, died May 13, 2019, at the age of 83.

Born in St. Louis, Dr. Wool received his undergraduate degree from Princeton University and his medical degree from Washington

University. He completed his internship at the former Jewish Hospital and residency at St. Louis Children's Hospital.

Following his residency, Dr. Wool served in the U.S. Air Force from 1966-1969. He returned to St. Louis to open a private practice and serve as an instructor at Washington University School of Medicine. He was on staff at St. Louis Children's Hospital, Barnes Hospital, Missouri Baptist Medical Center, Mercy Hospital St. Louis, St. Luke's Hospital and SSM Health St. Mary's Hospital. He served on the University City Board of Health and volunteered at a community health clinic. Dr. Wool joined the St. Louis Metropolitan Medical Society in 1965.

SLMMS extends its condolences to his wife Sandra Wool; his children Deborah, Pamela and Andrew; and his two granddaughters. —

## IN MEMORIAM

### Audrey J. Bermine



SLMMS was saddened to learn of the recent passing of retired longtime employee Audrey J. Bermine, on Saturday, May 11, at the age of 83.

Audrey began working for the Medical Society in April 1972. She retired following 33 years of service on Oct. 3, 2005, when the Society office relocated from Lindell Boulevard to Craig Road in Creve Coeur. Ms. Bermine served as the executive assistant to former SLMMS Executive Vice President Gordon Ron Garrett.

A memorial visitation was held for Ms. Bermine on May 17. SLMMS extends its condolences to her many friends and all who remember working with her. —

# For the Record

By Richard J. Gimpelson, MD

My practice before I retired consisted of patients who saw me for routine care, and many patients referred for minimally invasive gynecologic surgery. Prior records were often needed for both categories of patients. I rarely needed a patient's entire prior record. However, some patients requested their entire record be sent to me before even seeing me. The entire records were often so voluminous that my office needed a new ink cartridge to print everything. The referring physician often sent the pertinent records, and they were all I needed to complete my notes.

There was a third category of patients who came for a second opinion. I usually just needed records related to the patient's current problem. Most of these patients did not mind if I requested records from their prior physicians, but others did not want me to contact their prior physician under any circumstance.

Most of the time my history and physical revealed which old records were needed. I would just request those records from the prior physician if okay with the patient or from hospital records if the patient wanted to keep the visit confidential. I rarely asked for complete records because they were of little value. I discussed the need for lab results and imaging with the patients and the need to repeat some of these tests prior to my recommended treatment.

I am sure that most of you handle records the same as I have described above. Occasionally I would have a note from a physician informing me that the records would not be released until the patient paid past-due office charges. I would send a polite letter to these physicians informing them that the records I requested were necessary for the patient's care, and that he or she had legal options to pursue the patient's bill. Holding back

the requested information could jeopardize the patient's well-being. Please note this is a rare event.

A more difficult situation is with hospitals that are very slow or totally indifferent to sending records. This is also uncommon, but there is one hospital in west St. Louis County from which it is difficult to obtain records on a timely basis. I have been made aware of this from a number of physicians who have requested records from this hospital. Hopefully this situation will improve in the future.

My approach to getting needed records:

- Almost never request complete charts.
- Request prior operative notes, pathology reports and discharge summaries from hospitals, as their copies are often clearer than office copies.
- If needed, send a second request for records. If records are still not received, my office would call. If still necessary, I would call the prior physician or hospital myself.
- Try to avoid having patients retrieve their records as they are often charged for copies. (Note sometimes this is necessary, urgent or most convenient).
- If a patient or the physician requests my complete records, I send them, but I scream silently and make a comment to myself.
- Always send the operative notes, pathology report and my recommendations to all referring physicians.
- Never charge patients for giving them copies of their records if they so request.

In closing, there is one group to which I am always willing to send complete records. That group is attorneys. I have two reasons for this:

- 1) I want to show how responsible I am if I have to appear in court, either as a defendant or a witness.
- 2) I get paid for these records.

One can get the current fees allowed for sending records from: [health.mo.gov/atoz/fees.php](http://health.mo.gov/atoz/fees.php) or [www.msma.org/guide-to-medical-records.html](http://www.msma.org/guide-to-medical-records.html). —



Dr. Richard J. Gimpelson

*Richard J. Gimpelson, MD, is a retired gynecological surgeon and past SLMMS president. He shares his opinions here to stimulate thought and discussion, but these do not necessarily represent the opinion of the Medical Society. Your comments on this column are most welcome and may be sent to [editor@slmms.org](mailto:editor@slmms.org).*



# A “How-To” Primer on Getting Involved in Medicine

*Editor’s Note: This is the first in a regular feature of SLMMS member commentaries.*

*If you would like to submit a commentary of 500 to 1,000 words in length, please send it to [editor@slmms.org](mailto:editor@slmms.org).*

*By David L. Pohl, MD*

## Who?

You, because no one else knows your concerns and insights better than yourself. Everyone has at least one, if not several, ideas of how the practice of medicine could be improved. Every journey has a beginning—the first step.

## What?

Get involved with SLMMS to make your point of view heard locally and have your concerns brought to the forefront. Discuss the hot topics of medicine with your fellow physicians at the hospital, in the lounge and elsewhere to see what others think. You will likely find your ideas have more support than you may have thought. You are the best person to work for the issues that you think need to be identified and addressed.

## When?

Now—there is no other better time. Few people who have done anything rewarding and worthwhile have said they wished they had waited longer before they got involved. The best day to start is today.

## Where?

At the SLMMS Council meetings, at the MSMA state meeting, at the hospital, other meetings and multiple other venues where physicians meet to get organized into a unified voice. Having more people involved makes our voices louder and stronger.

## Why?

Because you know your patients better than anyone else and are the ideal individual to be their best spokesperson. Your patients trust you and want to know that you are working on their behalf.

## How?

By talking to your physician colleagues, coming up with ideas (both in and out of the box) and getting involved with SLMMS to help make your voice heard. Contact your SLMMS Councilors with your ideas and plans for action (and then think about becoming a Councilor). Talk to other physicians on staff at your hospital to garner support. Remember, all journeys begin with the first steps, and once you have taken that first step, the rest become a little easier. ➔



Dr. David L. Pohl

*David L. Pohl, MD, is a member of the SLMMS Council and was SLMMS president in 2013. He is a diagnostic radiologist and director of radiology for SSM Health St. Joseph Hospital West. He can be reached at [pohldlmd@sbcglobal.net](mailto:pohldlmd@sbcglobal.net).*

## What’s on Your Mind?



St. Louis Metropolitan Medicine invites physicians and other health professionals to submit articles on topics of their choosing. Suggested length is 500 to 1,000 words. Researched and referenced articles are welcome, but footnotes are not necessary. Consider this your opportunity to write your own guest editorial. Submit your article or any questions to [editor@slmms.org](mailto:editor@slmms.org). We hope to hear from you! ➔

## Welcome New Members

**Thank you for your investment in advocacy, education, networking and community service for medicine.**

### Catherine M. Appleton, MD

660 S. Euclid Ave., #8131, 63110-1010  
MD, Univ. of Florida, 2000  
Born 1975, Licensed 2005 ➔ **Active**  
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### Gary M. Gaddis, MD

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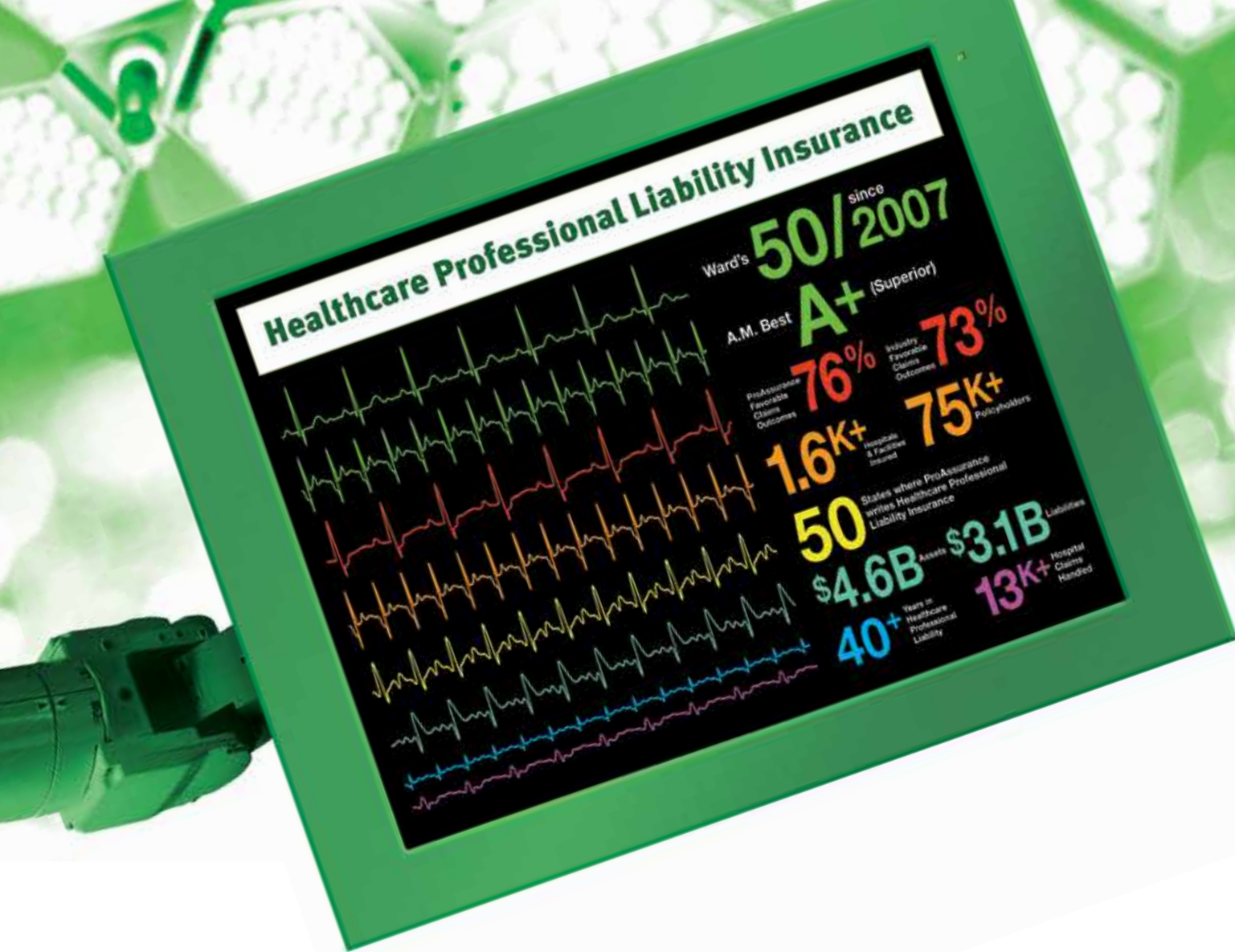
### Ramis Gheith, MD

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Born 1975, Licensed 1905 ➔ **Active**  
Certified: Anesthesiology

### WELCOME STUDENT MEMBERS

#### Washington University School of Medicine

Tony N. Barrack	Kristen M. Lineback
Curtis J. Broberg	Alex M. Shimony



## healthy vitals

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