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Medical professionalism in the modern era

by Richard L. Byyny, MD, FACP

The modern era of medicine has brought about incredible advances in science and technology designed to improve the care of patients and population health. At the same time, major social changes are occurring that impact society, patients, physicians, medicine, health care, and medical education.

Medical professionals are governed by ethical codes, and profess a commitment to competence, integrity, morality, altruism, and support of the public good. This is a social contract, a covenant of trust with patients and society that determines medicine’s values and responsibilities in the care of the patient.

Medical professionalism continues to be a core value and responsibility of physicians in the care of patients. Sir William Osler made the point, “the good physician treats the disease; the great physician treats the patient who has the disease.”¹ As physicians and medical professionals committed to caring for patients, meeting professionalism responsibilities requires that we identify, understand, develop, and implement best practices in the education and development of future generations of physicians, and medical professionals.

As an important part of our commitment to medical professionalism, we must address the role of changes in society, our profession, scientific medicine, students, residents, colleagues, the business of medicine, government, and other aspects of the modern era.

The changes presented by this modern era require leadership and education on the critical core values and ethics in medicine, and the care of the patient.

Professionalism past, present, and future

The first oath for medical ethics was written as The Code of Hammurabi in 2000 BC. Hippocrates and Maimonides subsequently developed oaths codifying the practice of medicine as the sacred trust of the physician to protect and care for the patient, and a set of values for physicians.²,³ Both emphasized teaching and learning, and the primacy of benefiting the sick according to one’s ability and judgment while adhering to high principles and ideals. These oaths were a form of social contract that codified what patients and society should expect from the physician.

Hippocrates combined physicians’ scientific and ethical promises with the precept against intentional harm as a central ethical duty, and humility as a core virtue.

In the 1800s, Thomas Percival developed the concept of shared professional responsibilities with the Manchester infirmary rules.⁴ He recognized the complexity of the medical environment in hospitals, coined the terms “medical ethics” and “professional ethics,” and developed the profession’s compact with society.
The 1847 Code of Medical Ethics of the American Medical Association was a landmark in medical professionalism. Derived from Percival’s earlier work, it was the first national code of ethics for any profession. It was an explicit professional compact defining obligations to patients, colleagues, and community, along with reciprocity. It implied social and economic rewards for those in the profession in exchange for putting patients’ interests first, and required competence of practitioners and guarding of the public’s health.

ΩΩA was founded in 1902, before the Flexner report and the Liaison Committee on Medical Education. Medical student William Root and a group of his fellow students were shocked by the lack of interest in high academic achievement by their faculty and other students in medical school. They found the behavior of students and faculty to be boorish, and clearly lacking in professional values. In establishing ΩΩA, they wrote: “The mission of ΩΩA is to encourage high ideals of thought and action in schools of medicine, and to promote that which is the highest in professional practice.”

They established the ΩΩA motto as “Be worthy to serve the suffering,” and developed the mission of ΩΩA:

Dedicated to the belief that in the profession of medicine we will improve care for all by:
- Recognizing high educational achievement;
- Honoring gifted teaching;
- Encouraging the development of leaders in academia and the community;
- Supporting the ideals of humanism; and
- Promoting service to others.

They defined the duties of ΩΩA members:

To foster the scientific and philosophical features of the medical profession and of the public, to cultivate social mindedness as well as an individualistic attitude toward responsibilities, to show respect for colleagues and especially for elders and teachers, to foster research, and in all ways to strive to ennoble the profession of medicine and advance it in public opinion. It is equally a duty to avoid that which is unworthy, including the commercial spirit and all practices injurious to the welfare of patients, the public or the profession.

In 1912, U.S. Supreme Court Justice Louis Brandeis wrote:

A profession is an occupation for which the necessary preliminary training is intellectual in character, involving knowledge, and to some extent learning, as distinguished from their skill; a profession is an occupation which is pursued largely for others and not merely for oneself; it is an occupation in which the amount of financial return is not the accepted measure of success.

In 2004, Drs. Richard and Sylvia Cruess wrote that the profession of medicine is:

An occupation whose core element is work based upon the mastery of a complex body of knowledge and skills. It is a vocation in which knowledge of some department of science or learning or the practice of an art founded upon it, is used in service of others. Its members are governed by codes of ethics and profess a commitment to competence, integrity and morality, altruism, and the promotion of the public good within their domain. These commitments form the basis of a social contract between a profession and society, which in return grants the profession a monopoly over the use of its knowledge base, the right to considerable autonomy in practice, and the privilege of self-regulation. Professions and their members are accountable to those served, and to society.

Today, the profound and rapid advances in medical knowledge, technology, specialized skills, and expertise are changing faster than medical schools and practitioners can keep up. These rapid changes, along with the fact that many physicians are now employees in the corporatization of medicine, have created different values.

These changes make it even more important that we practice medicine based on core professional beliefs and values in the doctor-patient relationship and the care of the patient. Physicians must understand their obligations and commitments. They must put patients first and subordinate their own interests to those of others. They must adhere to the highest ethical and moral standards.

Medical professionalism continues to be one of our profession’s most important commitments, and signifies our trustworthiness, accountability, and commitment to patients.

Medical professionalism must also be recognized as an active, ongoing, and iterative process that involves debate, advocacy, leadership, education, study, enforcement, and continuous transformation. There should be no capitulation to efforts or circumstances that undermine ethics, values, or medical professionalism.
Transformation

There has been dramatic transformation in medicine over the last several decades, from the private independent practitioner to the organization of a common group of physicians, to a corporate group of physicians, often employed by hospitals and systems. Medicine has also seen the introduction of entrepreneurs, investors, and corporate executives. No matter where or how they are employed, physicians are obligated to adhere to an ethical ideal and professional values that focus on providing care in the best interest of patients.

In the modern era, professionalism is threatened by issues of self-interest, power, prestige, profit, pride, privilege, and lifestyle. Venality, character deficiencies, irresponsibility, and greed can be underlying factors for unprofessional behavior.

The commodification of health care as a product, like any other left to the ethos of the marketplace, competition, commercialization, and profit-making, is a current day social factor influencing the profession and professionalism. Commodification results from the legitimization of profit, competition, and self-interest inherent in a free-market economy wherein medicine is just another product or commodity, and not a social good and human benefit. The physician is now conflicted between the values and needs of patients and the medical organization that is the employer.

Medical organizations now strive for increased profits and efficiencies by curbing costs. This results in the conflict of medical professionalism versus the lack of medical ethics and values in business. Physicians, as healers and professionals, are often not evaluated or respected for their competent and professional care of patients. A physician's professional worth is now measured in productivity—how many patients can be scheduled and quickly seen.

Medical professionalism and its tenets are challenged, and its content considered negotiable or a changeable construct of societal mores. This was foreseen by Paul Starr in 1982 in “The Transformation of American Medicine.” He predicted the growing privatization and monetization of medicine.

The generation gap

There are evolving generational differences in students, residents, faculty, and practitioners. Each generation has its own set of characteristics, defining moments, and values, with shared conflicts and achievements. There are traditionalists or the Silent Generation, Baby Boomers, Generation Xers, and now the Millennials. Ethical values differ among these generations, as well as differences in lifestyles, work styles, and leisure activity.

More than 10 years ago, when I was Chancellor of the University of Colorado at Boulder, I had the privilege of teaching undergraduate students in the President’s Leadership Class. There were some pre-medical students, along with those majoring in engineering, business, science, and humanities and arts. Using case-based teaching, I presented on a 56-year-old president of a successful company in diverse businesses including technology. He was married and had three pre-collegiate children. He was wealthy, and prominent in the community. The company had increasing profitability until the last few years when they leveled off and began to slow. He was under increasing pressure to turn the company around. He had a vacant executive position. It was such an important position that after his staff had screened and interviewed all the candidates, he decided to personally interview the finalists.

One candidate was a highly successful mid-career male executive. The CEO began the interview with the usual preliminary questions. He then asked how the candidate could contribute to the company. The candidate smiled while answering, “I know you have been struggling recently, and you know I work for one of your competitors.” He opened his briefcase and pulled out some DVDs and said, “All of my current employer’s database and information is on these DVDs. If I get the job, they are yours.”

The students were asked, “If you were the CEO what would you do?”

It was a shock when more than 60 percent of the students said they would hire the candidate and take the DVDs. They rationalized that it would help the company through a difficult time in a competitive business. Some said the CEO needed to maintain his job, income, and stature in the community. Some worried about his wife, and if he lost his job how the children would fare and be able to attend an expensive exclusive college. They worried that he may have to move out of his huge home in a gated community.

When the students who would not hire the man were asked why, half said what he was doing was illegal, while the other half felt it was unethical and the wrong thing to do.

This is a generation that has grown up with computers and social media. They view the world in a different context than previous generations. Today’s medical students have never used a rotary phone or pay phone. They have never had to get up off the couch to change the channel on a TV that only gets three or five channels. They’ve never held a transistor radio to their ear. Their textbooks
are provided to them in electronic format. The world is at their fingertips through the Internet. For many, the presentation of information has become an insidious influence in losing intellectual independence.9

In today’s world, anyone with a computer, tablet, cell phone, or other electronic device is bombarded with jibber-jabber, rumor, and opinions from people who presume to know, remember, or have biases with inaccurate or false information.

When information is presented, listening with a discerning ear is required. Confirmation of the information presented through trusted, reliable sources is vital. Technology, information, and data as presented and accessed may be an impediment to knowledge, learning, and core values.

Is medicine nothing special? Is it just an occupation like any other? Is the marketplace the appropriate venue for health care? Is the assumption that patients will fare better if competition is unfettered and profit is encouraged and acceptable? We are often facing a critical dilemma with ethical and moral capitulation, and unprofessional accommodations.

Defining best practices—Reflections from the AΩA Professionalism Conference

In 2016, AΩA held its third Professionalism Think Tank Conference “Medical Professionalism Best Practices: Professionalism in the Modern Era.” Many times during the conference there were new or different insights that influenced the group’s learning and understanding of medical professionalism in the modern era. The discussions were thoughtful, insightful, inspiring, and educational. The sharing of information was designed to instill creativity and develop best practices to learn how to better care for patients, and each other, in the modern era.

There was a consensus among the group that medicine in the 21st century will need to be based on the moral foundations of professionalization and professionalism in the care of the sick, and will require trust in a physician's competence.

The responsibility of medical educators is to teach the next generation, and ensure that the primacy of the welfare of patients is foremost and will be preserved based on moral status and integrity. Medicine must continue as a moral and responsible profession.

In 2002, the ABIM Foundation, in conjunction with the American College of Physicians Foundation, and the European Federation of Internal Medicine, authored Medical Professionalism in the New Millennium: A Physician Charter. The fundamental principles of the Charter are the primacy of patient welfare, patient autonomy and social justice. The Charter also articulates the professional commitments of physicians and health care professionals in the modern era.10

Many professional organizations have also developed a set of professional responsibilities around:

- Professional competence;
- Honesty with patients;
- Patient confidentiality;
- Maintaining appropriate relations with patients;
- Improving quality of care;
- Improving access to care;
- Just distribution of finite resources;
- Scientific knowledge;
- Maintaining trust by managing conflicts of interest; and
- Professional responsibility.

Although most schools have curricula related to professional values, what students learn and retain can often be from what is called the “hidden curriculum”—the today experiences of students working in the clinical environment while watching, listening, and emulating resident and physician behaviors. Fortunately, many schools and teaching hospitals have implemented curricula to improve medical professionalism, and some have attempted to develop methods of evaluating aspects of professionalism. The most effective programs lead by changing the entire culture and environment to respect and reward professional behavior, and to diminish the negative impact of the hidden curriculum.

However, we shouldn’t presume that professional core values in medicine are intuitively apparent. There is ongoing debate about the importance and value of a physician’s oath or solemn promise. We must have clear professional expectations that are explicit for all physicians, and a commitment for physicians to respect and uphold a code of professional values and behaviors. These include the commitment to:

- Adhere to high ethical and moral standards—do right, avoid wrong, and do no harm.
- Subordinate personal interests to those of the patient.
- Avoid business, financial, and organizational conflicts of interest.
- Honor the social contract with patients and communities.
- Understand the non-biologic determinants of poor health, and the economic, psychological, social, and
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Cultural factors that contribute to health and illness—the social determinants of health.
- Care for all patients regardless of their ability to pay, and advocate for the medically underserved.
- Be accountable, both ethically and financially.
- Be thoughtful, compassionate, and collegial.
- Continue to learn, and strive for excellence.
- Work to advance the field of medicine, and share knowledge for the benefit of others.
- Reflect dispassionately on one’s actions, behaviors, and decisions to improve knowledge, skills, judgment, decision-making, accountability, and professionalism.

Efforts in medical professionalism continue to be a work in progress. As physicians, we are continually learning about medical professionalism, and how to maintain and improve a standard of physician behavior. We need to remember that we call our work “the practice of medicine” because we are always practicing our profession to learn and improve. Our goal is not perfection, but continuous learning, improvement, and focusing on what is best for the patient.

Constructs of professionalism

Professionalism, as a construct, has changed dramatically over the past 40 years. Initially, professionalism was associated with personal character, virtues, ethics, and humanism. Later, professionalism became a competency with behaviors to be demonstrated and assessed. More recently, professionalism has come to be viewed as a matter of professional identity formation.

Three models of professionalism

The centuries old model of professionalism is associated with virtues and ethics. A good physician is a person of character who is able to apply ethical principles, curb self-interest, demonstrate the virtues of compassion and respect, and be humanistic, trustworthy, and caring.

In the 1990s, a different model arose around behaviors and competencies. The behavioral model emerged in response to the perceived failure of the virtues model to translate ethical instruction into ethical action. The good physician, according to behaviorists at the time, was a person who manifested a defined set of behaviors, and demonstrated professionalism competencies.

In the past decade, a third model appeared: professional identity formation. This approach developed in reaction to concerns about the reductionist, behavioral model, and described the progressive incorporation of the values and aspirations of the profession into the identity of the person as a physician. The good physician takes on the identity of a community of practice, and is socialized into the values, aspirations, and behaviors of the field.

Each model has strengths and limitations, and each adds to the greater whole. Professionalism can be viewed as a matter of character, humanism, and ethical reasoning, which is inspiring to learners and practitioners.

Professionalism can also be seen as adoption of appropriate behaviors, and demonstration of an area of competence, which tightly aligns instruction and assessment. Professionalism can be viewed as a process of being and becoming—of taking on the identity of a medical professional, a healer, and a physician, which is also inspiring, and encourages self-reflection.

Best Practices:
- Professionalism describes the process by which students, residents, faculty, and leadership psychologically develop through social processes of instruction, coaching, feedback, reflection, and identity formation.
- Professionalism lapses should be dealt with differently depending on whether it is considered to be an inability to apply ethical principles, an instance of inappropriate behavior, or a lack of insight into one’s own professional identity.
- At the level of individual learner and practitioner, opportunities exist to move from talking about ideals and aspirations of professionalism to helping students and faculty negotiate value conflicts, and balance tensions in moments of stress.
- With the changing demographics of today’s learners, the values of professionalism must be made explicit and taught directly. Students must be taught how to negotiate situations where unprofessional actions are being observed.
- Schools and hospitals need to teach professional standards and practices, ensuring that learners understand why the standards exist, and explaining the consequences of not meeting the standards.
- Patients are harmed by failure to disclose errors and mistakes. The ability to report and apologize requires peer support, coaching on disclosing errors to patients, and a complementary system that values transparency and humility.

Professional identity formation

The emphasis on professional identity formation resulted from the recognition by medical educators that an
individual’s identity begins to emerge at birth and proceeds in stages throughout life with the period beginning in the late teens, and stretching into early adulthood being particularly important. The process of professional education in medicine is superimposed on this normal development, and has a profound impact on the identities that emerge.

Individuals, at a particularly formative stage of their lives, enter medical school with preexisting identities that have been shaped by both nature and nurture. During the long period of undergraduate and postgraduate education, each learner must come to terms with these norms of the community of practice that they are entering. These norms are actually outlined in the definitions of profession and professionalism, as well as a list of characteristics or attributes. Each learner must care for patients with these norms.

The major factors impacting identity formation in medicine are role models and mentors, and both clinical and nonclinical experiences.

One way to achieve this essential objective is to specifically design educational programs that support individuals as they develop the professional identity necessary for the practice of medicine, so that each practitioner has come to think, act, and feel like a physician.

Best Practices:
– Professional identity formation—the development of professional values, actions, and aspirations—is the backbone of medical education.
– Medical students acquire the identity of a physician during the course of their educational experiences. They aspire to join in a community of practice—the practice of medicine—with a shared competence and professionalism they acquire from role models, mentors, and experiences. Physician identity is that of a healer, and a medical professional.
– The ultimate objective of medical education is to ensure that individuals are professional in their behavior because of who they have become. To achieve this, medical schools must design specific education programs that support individuals as they develop the professional identity necessary for the practice of medicine—to think, act, and feel like a physician.
– The central issue with learning is becoming a practitioner, not learning about practice.

**Generational differences**

Whether the situation involves work hours, social media, or digital devices, a shared understanding of professional comportment is essential. Generational differences can lead to different interpretations of professionalism, and communication is the key to avoiding misunderstanding.

Professionalism disconnects can arise from different personal and generational viewpoints. Professionalism can be contextual and situationally nuanced. Establishing safe spaces for direct communication, and educating faculty and learners about the ways to communicate and navigate professionalism differences will help reduce the generational angst, allowing us to work together as professionals, in healthy environments, and on collegial teams.

Best Practices:
– Generational differences can lead to different interpretations of professionalism. Communication is the key to avoiding misunderstanding.
– Define appropriate and inappropriate behaviors. Review expectations, encourage and respond to questions, and establish a shared understanding of rules and consequences.
– Model professional behavior. Be aware of inadvertent lapses in professionalism, and acknowledge them when they occur.
– Communicate directly. Timely communication in an appropriate environment is key. Articulate concerns in an objective manner, seek to understand other’s perspective, and clearly state expectations.

**Caring**

Medical professionalism should be seen as a tiered construct divided into basic professionalism (doing the right thing well), and higher professionalism (service that transcends self-interest). Both require a physician who cares.

In 1902, Osler told members of a medical society, “The times have changed, conditions of practice have altered and are altering rapidly, but…we find that the ideals which inspired [our predecessors] are ours today—ideals which are ever old, yet always fresh and new, and we can truly say in Kipling’s words:

And the men bulk big on the old trail, our own trail, the out trail,
And life runs large on the Long Trail—the trail that is always new.”

The trail for the men and women of the new millennium presents steep climbs, especially if they are to be more than technicians who care. However, if they can
achieve a level of caring in which service transcends self-interests; if they can care not just for individual patients but also for the greater good; if they can care about caring as a subject deserving their continued attention, then their capacity for good knows no limits.

Best Practices:
– A physician professional is a competent clinician and is “working to serve the suffering.”
– By achieving a level of caring in which service transcends self-interest, physicians can care for individual patients, and also for the greater good.
– When caring is a subject deserving of continual attention, then an individual’s capacity for good knows no limits.

Retraining professionals
Is professionalism all about following the rules? If so, whose rules? Were these rules generated by the profession? The organization? Some hard-to-untangle mash-up of the two? How do formal framings, the bureaucratic scaffold of the educational enterprise, and the financial undercurrents of delivering health care, cause medical schools to function as little more than farms in the production of a certain sheep-like product?

Are we, as faculty, internalizing a sheep farming approach to professional preparation? How do the forces of unconscious bias, group preservation, and the desire to select and train future generations of physicians to be just like us push a follow-the-rules, role-model-reverence, and etiquette-based approach to professionalism?

What might happen if we deliberately reimagine medical schools not as sites of cultural reproduction (a.k.a. factories), but rather as sites of cultural resistance? Resistance could be operationalized as skill sets designed to:

1. Problematize the application of routine solutions to non-routine problems; and
2. Recognize where and how market incentives and bureaucratic structures leak streams of tacit messages into the learning environment contrary to core professionalism principles.

There is considerable conflict between what students aspire to, and what they are being educated/programmed/socialized to do. The overall picture is one of medical schools as sites of cultural reproduction rather than sites of cultural resistance.

Medical education and medical educators must step back and ask themselves the teleological question, “to what end?” What is the function of medical education? What are the challenges to which we seek to train professionals for the modern era? What are the practice environments of the future, and how should our future practitioners—as professionals—fit (and not fit)?

We need to subject educational practices to a more extensive array of theatrical, conceptual, and occupational lenses. It is not altogether clear whether the norms that currently guide medicine’s professionalism movement remain its own, and are sufficiently distinct from a rules-based/command and control/professionalism-police framing of what it means to be a good doctor. There is concern about how medicine’s professionalism movement is sufficiently generated internally, and renewed, as opposed to being set by external interests. If the agenda is internally set, medicine might be perverting its own core principles by promulgating a just-follow-the-rules framing of professionalism, thus becoming a version of the famous Pogo dictum, “We have met the enemy and he is us.”

Medical educators must think long and hard about the structural and cultural context of their training environments. This means moving beyond a preoccupation with content. Learning is never context free. There is no such thing as an informationally indifferent, or message-balanced learning environment. There are no revenue neutral, or neutral-to-revenue, learning environments.

Learning environments are awash with messaging, much of which functions to shape the identity of physicians as professionals. The impact of industry and markets on the learning environments of medical trainees is both real and appreciable. So too are the bureaucratic messages of order and social control. All exert pressures on how work is carried out and valued, including the technical aspects of that work.

If being a good doctor is learned within a dynamic interplay of professional, bureaucratic, and market messaging, where do we encounter a framing of professionalism as something other than top-down, sheep-like messaging (rules)? Or, as normative aspirational chants that ask practitioners to rise above, or temporarily hold in abeyance, any such anti-professional pressures? Where do we find within the formal curriculum a view of professionalism where bureaucracy and markets are identified as countervailing forces that require resisting for the sake of medicine’s soul?

Bureaucratic and market forces will continue to battle for the hearts and minds of 21st century professionals essentially unopposed by the ethos, ethics, and practice of
professionalism. In the end, none of this is about saving the world for professionals, rather it is about saving health care for patients and the public in a world where mission increasingly is defined in terms of margins, and where standardization will deliver inappropriate care to both ends of any illness distribution.

Best Practices:
– Apply an extensive array of theatrical, conceptual, and occupational lenses to educational practices.
– Move beyond content—learning environments are inundated with messaging to shape the identity of physicians as professionals.
– Resist stasis by constructing learning environments that will cultivate curiosity and attentiveness, and result in physicians doing the right thing for patients, families, and our profession.

Building an infrastructure to support professionalism

Medical educators and leaders of health systems have enormous opportunities to shape the professional development of learners. The determining factor is whether they try to do so with a balanced approach.

To support and sustain learners’ development, it is crucial to identify and build sustainable models to ensure that learners are exposed to positive role models, and introduced to how professionals self-regulate, and why. Curricula and experiential learning approaches are unlikely to have a lasting impact if organizations fail to put in place the right people, processes, and technology to address unprofessional behaviors among senior team members, as well as learners. Unless there is a balanced approach, professionalism education will not have a sustained and lasting impact on learners and delivery of care that is safe, effective, and patient-centered. Organizations need to have the right people, processes, and technology in place to appropriately address “disturbances in the force” in a timely manner, and reduce the probability of pattern development in role models, and ultimately, in learners.

As demonstrated at Vanderbilt University Medical Center, supporting educational development and professional identity formation of learners through careful attention to life-long learning principles, self-directed learning, and reflection are important foundations of professionalism education. However, without an organized approach to support professional accountability with the right people, processes, and technology to address negative role models and sustain the effort, we are likely to see an unending cycle of unprofessional behaviors, moral distress, and cynicism.

Drexel University College of Medicine has developed a comprehensive, longitudinal professionalism curriculum with elements across courses and clerkships in multiple institutions and teaching hospitals that promote understanding of professionalism and professional formation of trainees. The curriculum includes clinical ethics; humanism; personal awareness and reflective practice; empathic communication skills and compassion responsiveness; commitment and accountability to the professional community; and cultivation of physician virtues.

Appreciative debriefing and inquiry promote a positive culture of social support among students. A multifaceted assessment system identifies at-risk students who may benefit from additional faculty support or remediation strategies.

Best Practices:
– Medical educators and leaders of health systems can, and should, shape the professional development of learners through a balanced approach, supporting educational development and professional identity formation using life-long learning principles, self-directed learning, and reflection.
– Health care systems must have an organized approach to support professional accountability with the right people, processes, and technology.
– A comprehensive, longitudinal professionalism curriculum with elements across courses and clerkships that promote understanding of professionalism and professional identity formation, is needed.
– Clinical ethics, humanism, personal awareness, reflective practice, empathic communication skills, compassionate responsiveness, commitment to accountability, and cultivation of physician virtues are core to the medical school curriculum.

The learning environment

U.S. Census data shows that the profile of young Americans age 18–34 years has changed dramatically. The proportion of young adults who are racial and ethnic minorities has doubled in the last 30 years; one in four of this cohort speak a language other than English at home; and far fewer of this group were born in the U.S. compared to their peer group in 1980. This change in the profile of medical school matriculants corresponds with, and may even be due to, an evolution in the way in which individual medical schools are assessing and evaluating applicants.
In response, the Association of Academic Medical Centers began working with individual medical schools to implement a holistic review of medical education to incorporate key aspects of behavior, character, and performance that have direct impact on the practice of medicine, and which are not easily assessed by academic performance or standardized test scores. Through national presentations, on-site training at medical schools, and broad dissemination of resources, the practice of holistic review in medical school admissions has become widespread over the last 10 years. Holistic review allows medical schools to consider the qualities of an outstanding physician, and look for experiences and attributes in the applicant that may presage the future attainment of such traits.

The circumstances that characterize the learning environment are resulting in multiple new challenges. Overburdened faculty are now addressing concerns such as duty hour limits; managing an ever-increasing set of responsibilities related to paperwork; demands for increasing productivity in a challenging fiscal environment; increased regulation by oversight agencies; and a larger number of student learners, all of which combine to reduce time for teaching. Add to this, advances in pedagogic technology including the use of simulation and standardized patients, as a replacement for direct patient contact due to safety concerns.

Medical educators must now navigate a new generation of learners, and a learning environment contending with multiple new challenges and strict guidelines focused on teaching and evaluating professionalism. By exploring specific scenarios related to professionalism challenges, either from an individual learner’s perspective or in the learning environment, we can assess the different options that might be utilized to address these incidents and what the potential results might be.

Taking lessons from the student’s perspective, the Pritzker School of Medicine has worked hard to enhance collaborative learning across all components of the curriculum by expanding the content of the health care disparities course to include training in intersectional practice and patient care for the LGBTQI community; implementing implicit bias training; and increasing the number of underrepresented students. To address the lack of diversity among the faculty, the dean of the biological sciences division appointed a new associate dean whose role is to launch an institutionwide initiative to enhance diversity and inclusion at all levels, from faculty to residents and fellows, to graduate and medical students, to staff.

The school has enhanced the level of support for all students, by launching a new Wellness Committee which provides programming for the entire school. The school also convened an Identity and Inclusion Steering Committee composed of faculty, students, and staff who are charged with providing ongoing direction for programs and/or curricula that support an inclusive learning environment, and promote respectful and effective communication with diverse patients and colleagues around issues of identity.

We must preserve the core values of medicine, and act directly on behalf of the patients and families whose care will be entrusted to the next generation of physicians.

Best Practices:
– Enhance collaborative learning across all components of the curriculum to include training in intersectional practice and patient care for vulnerable and underserved populations.
– Implement implicit bias training for students, faculty, and leadership.
– Medical educators must consider the appropriate response to support the highest standards of professional behavior in students, and the characteristics of a learning environment that supports these standards.

Inclusiveness
Inclusion is a core competence for professionalism in the 21st century.

Developing interprofessional teams of providers to care for increasingly diverse populations, and conducting interdisciplinary research in a competitive global environment are essential to achieving high quality, culturally-mindful care with enhanced innovation.

Given the growing diversity of the U.S. population, the delivery of culturally appropriate care is critically important. When the socioeconomic environment influences the health of patients and the effectiveness of treatment, the ability to care for patients is negatively impacted.

Medical professionalism and the social and economic landscape of society are inexorably intertwined. If the healing arts intend to fulfill the goal of addressing the health of patients and the communities in which patients reside, then the ills that impact vulnerable communities must be taken into consideration, including the rising cost of health care. Unless these issues are addressed, i.e., social justice, efforts to enhance the quality of care will not be successful.

There is an increased recognition of implicit bias and its impact on professionalism and personal lives. In medicine, these biases can impact medical school admissions,
The delivery of care, and federal policy. Evidence-based tools are available to assist individuals and institutions in interventions to mitigate bias.

To build a more inclusive culture it is important to recognize our own biases and develop strategies to mitigate them.

The interventions suggested for health care systems include:

- Promote the consistency and equity of care using evidence-based guidelines.
- Structure payment systems to ensure an adequate supply of services to minority patients, and limit provider incentives that may promote disparities.
- Enhance patient-provider communication and trust by providing financial incentives for practices that reduce barriers and encourage evidence-based practice.
- Support the use of interpretation services where community need exists.
- Support the use of community health workers.

As medical professionals, it is important to consider these recommendations, support them institutionally, and recognize our biases in every patient interaction.

Medical professionalism cannot be viewed in isolation given the significant contributions of the socioeconomic factors to the health and well-being of patients. As providers, it is our responsibility to acknowledge these external factors, and to openly discuss the challenges that may be impacting patients. We also have a responsibility to each other, being mindful of our own biases and how they may impact our professional interactions.

The development of interprofessional teams, and conducting interdisciplinary research are essential to achieving high quality, culturally-mindful care with enriched innovation.

Best Practices:
- Acknowledge the socioeconomic factors and social determinants of health, and openly discuss the challenges that may be impacting patients and the delivery of care.
- It is the responsibility of educators, residents, faculty, and leadership to develop strategies for use in personally uncomfortable situations.
- Be mindful of biases and how they impact professional interactions and patient care.

Conclusion

Professionalism has been a core tenet of the AΩA mission for more than 115 years. Now, more than ever, we must take a leading role in ensuring that professionalism is the foundation of our covenant with society.

AΩA will continue its commitment to medical professionalism, and it is our hope that all medical educators will work with us to promote best practices in medical professionalism in the modern era.

Therefore, The Pharos will continue to seek and publish papers on professionalism in medicine. To submit a paper to The Pharos for consideration by the Editorial Board for publication, visit http://alphaomegaalpha.org/contributors.html.

To obtain a copy of the first AΩA monograph Medical Professionalism Best Practices, and/or the second AΩA monograph Medical Professionalism Best Practices: Professionalism in the Modern Era, please send an e-mail with your mailing address, and the number of copies of each publication you would like to receive, to info@alphaomegaalpha.org.

You may also view the AΩA monographs online at alphaomegaalpha.org.

“Be worthy to serve the suffering.”

References

Leadership in medicine, medical education, and health care is more complex in the 21st century than ever before. Escalating costs, unequal access, less than ideal outcomes, and political challenges have contributed to an unprecedented level of uncertainty in the delivery of health care and medical education.

The medical profession and the country are in need of leadership that is inspiring, insightful, engaging, and humble; leadership that understands and represents the needs of patients, physicians, medical educators, and trainees. Because of their unique knowledge of the practice of medicine, and understanding of medicine's core professional values, physicians are ideally prepared to serve as leaders.

Encouraging the development of leaders in academia and the community has been, and continues to be, a core AΩA value, and an important part of the organization's mission.

The AΩA Fellow in Leadership recognizes and supports the further development of outstanding physician leaders through the tenets of leading from within; upholding AΩA's values and mission; and a commitment to servant leadership.

The five essential components of the AΩA Fellow in Leadership are:

1. Self-examination, the inward journey, leading from within;
2. A structured curriculum focused on leadership, including an understanding of the relationship between leadership and management;
3. Mentors and mentoring;
4. Experiential learning to broaden the perspective and understanding of leadership as it relates to medicine and health care; and
5. Team-based learning, and developing communities of practice.

Nominations for the AΩA Fellow in Leadership are made by the senior executive of a medical school, hospital, or health care organization, who agrees to serve as a mentor for the Fellow. The nominating organization and Fellow designate at least one additional mentor who supports the completion of a leadership project, serves as a role model, offers advice as needed, and connects the Fellow with key individuals in leadership positions. At least one mentor is at the senior leadership level, i.e., a Dean, Chief Executive Officer, or the President of an association or an organization that has a regional or national presence.

These relationships, and leadership opportunities and experiences, are ongoing throughout, and after, the fellowship year.

The Fellows each receive a $25,000 award for further leadership development and project funding.

The third cohort of AΩA Fellows in Leadership—Brian Clyne, MD (AΩA, Warren Alpert Medical School of Brown University, 2016, Alumnus); Nora Gimpel, MD (AΩA, University of Texas Southwestern Medical Center at Dallas, 2016, Faculty); and Susan Lane, MD (AΩA, Stony Brook University School of Medicine, 2011)—were selected for their diverse backgrounds, career performance and success, leadership experience, mentor support, and proposed leadership project.

The Fellows have successfully completed their year of leadership development and join the growing AΩA Fellows in Leadership Community of Practice. They presented the findings, outcomes, and lessons learned from their projects to the AΩA Board of Directors during the October 7 annual meeting.

Brian Clyne, MD—Developing Physician-leaders in Undergraduate Medical Education

The AΩA Fellow in Leadership experience has surpassed my expectations, and has been a highlight of my career. I was drawn to the program for its commitment to developing physician-leaders, and its emphasis on service; however, it also proved to be an ideal setting to integrate my background in education with my interest in leadership development.

**Addressing the physician leadership imperative**

As a residency program director, I understand leadership as a professional obligation, and an essential part of the physician identity. Many residency graduates were well prepared for clinical practice, but ill-equipped to confront the complex challenges facing health care. In their everyday work, physicians exercise leadership with individual patients, but are increasingly called on to assume leadership roles on multidisciplinary teams, and within organizations. To effect needed change, physicians must understand health care at the system or population level, and possess the skills to improve quality, lower costs, and increase...
value. As a result, there has been a proliferation of physician leadership training programs sponsored by universities, academic medical centers, and specialty societies.

The focus of my AΩA project evolved throughout the year from a faculty development program to a student curriculum. It began as an effort to improve mid-career physician leadership by establishing a multidisciplinary leadership academy at Alpert Medical School in the Division of Biology and Medicine at Brown University.

The division includes more than 2,000 faculty members across six campus-based departments, and 15 clinical departments in seven hospitals. The proposed academy would be open to select faculty from all affiliated institutions.

The guiding principles of the academy would center on teamwork, experiential project-based learning, and faculty diversity. It would serve to retain talented people, and address issues of inclusion and diversity through leadership development. It would provide faculty with a community of peers with, and from whom, they can learn.

In the first phase of the project, an oversight group was established, and a local needs assessment to inform the program curriculum was completed. At the same time, various leadership frameworks, and the features of leadership development programs at peer institutions and those from other industries were studied. This led to the submission of a formal proposal to expand and centralize faculty leadership development.

As the project gained momentum, however, things took an unexpected change in direction, providing lessons on adaptability and resourcefulness.

**Shifting priorities to future physician-leaders**

Before the AΩA fellowship year began, I was working on a leadership curriculum for medical students, specifically those enrolled in a new Primary Care-Population Medicine (PC-PM) dual degree program at Alpert Medical School. This unique program allows up to 24 medical students per year to earn a Master’s of Science in Population Medicine in addition to their Doctorate of Medicine. Students obtain these degrees through a course of study that includes research methods, population science, and leadership. Students are selected based on a demonstrated interest in population health, and a commitment to developing as a leader.

The course I helped develop, Leadership in Health Care, was piloted in the PC-PM program in September 2016. It provides an introduction to core leadership topics like emotional intelligence, communication skills, conflict management, team-building, and leading change (see Table 1). It emphasizes self-awareness and servant leadership, and employs interactive teaching methods. A key component of the course is an experiential, team-based leadership action project (LAP) through which students identify and address a health care challenge. The LAP requires teamwork, experimentation, application of lessons learned, and deliberate practice.

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<tr>
<th>Table 1 Alpert Medical School’s Leadership in Health Care Core Sessions</th>
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<tr>
<td>Servant Leadership Theory</td>
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<td>Leading with Personal Integrity</td>
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<td>Essentials of Effective Interpersonal Communication</td>
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<td>Team Dynamics and Team Building Workshop</td>
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<td>Media Training Workshop: Speaking Persuasively in Public</td>
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<td>Creating a Vision and Motivating Others</td>
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<td>Leading from the Middle: Influencing Change in Complex Organs</td>
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<td>Resilient Leadership and Life-long Learning</td>
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Feedback from the pilot was positive. The potential impact on the community through the students’ projects was apparent. The capstone session was a highlight of the course during which students presented their projects to an audience of health care leaders from the community, medical school, and hospital system. Based on evaluations and student input, it was clear that Leadership in Health Care had played a role in increasing leadership behaviors, and improving team dynamics.

The success of the pilot course led to a commitment from the medical school to increase its support, and build more comprehensive, longitudinal leadership training opportunities.

Realizing that I could not simultaneously grow the student leadership program, and establish the faculty academy, I shifted my focus solely toward the students. For the Fall 2017 semester, Leadership in Health Care was expanded to include more students, with plans to integrate leadership throughout all four years of the medical school curriculum.
Lessons learned

Despite a mid-course adjustment to my AΩA project, I applied many of the same principles of curriculum development and leading change. The experience highlighted the importance of staying true to one’s core ideas and values, while remaining flexible when circumstances change.

Through the project, I also learned the importance of setting goals and communicating a clear vision. Critical to persuading stakeholders was painting a compelling picture of students as physician-leaders, and their potential for long-term impact. I’ve also learned that for a project to be successful, one must break it down into its component parts, and have a plan for each stage of the process—the specific task, the time frame, the responsible party, and how to ensure accountability. Above all, the AΩA experience helped me understand that doing meaningful work and influencing change takes time, discipline, and a team you can depend on.

The inward journey

The principles of servant leadership align well with my career philosophy and motivations. I view teaching as a direct extension of patient care, and believe in improving health care on a large scale through education. My interest in leadership development stems from the same values of teaching and service.

Throughout this experience, I’ve reflected on, and sought to demonstrate, the qualities of servant leaders—listening, empathy, awareness, and a commitment to the growth of others. The inward journey of leadership has helped me understand that doing meaningful work and influencing change takes time, discipline, and a team you can depend on.

Financial support from AΩA allowed me to complete the Executive Masters in Healthcare Leadership (EMHL) at Brown University. The EMHL’s approach to project-based learning, and its team atmosphere, has been an excellent fit for my personality and learning style. The experience of being a student and teacher of leadership at the same time has been unique. I’ve gained a deeper appreciation for interactive teaching methods, and discovered that there are universal leadership skills that can be learned and enhanced regardless of whether one is an experienced health care executive or a medical student.

The concepts I’ve learned through EMHL courses on quality improvement, change management, and strategic planning have been directly applicable to my AΩA project. The EMHL also improved my understanding of health care policy, organizational culture, and finance—all of which have broadened my perspective.

The AΩA fellowship has reaffirmed my desire to continue learning, teaching, serving, and developing as a leader. I hope to create opportunities for others that I might give back what I’ve been privileged to receive.

References


Nora Gimpel, MD—Developing a Coordinated Approach to Community Health Training in Medical School

Community health initiatives—specifically service learning—train medical students to assess the health needs of a specific population, and implement and evaluate interventions to improve outcomes. According to the Association of American Medical Colleges (AAMC), service learning is defined as a structured learning experience that combines community service with specific learning objectives,
preparation and reflection. It is also based on community identified concerns developed and implemented in collaboration with the community. Service learning takes students out of the classroom into real-world situations, and provides experiential learning.1–5

The University of Texas Southwestern Medical School (UTSW) is one of four medical schools in the University of Texas System. It serves 950 medical students who participate in more than 100 community health activities each year, including running and staffing four student-run free medical clinics in the Dallas area.

In 2015, UTSW redesigned its medical education curriculum to offer a shortened pre-clerkship period, and an extended clerkship period with a 12-week scholarly activity requirement. Medical students can choose to complete their scholarly activity in community health, quality improvement, global health, biomedical innovation, medical education, basic research, or clinical and translational research.

The present challenges in health care offer UTSW an opportunity, and a responsibility, to prevent and reduce the disproportionate burden of disease affecting vulnerable communities, and develop appropriate and effective models of health in all communities.

Multiple health initiatives (health fairs, students-run free clinics, community-based participatory projects, etc.) are implemented by UTSW students, with many of the service learning opportunities hosted in the Department of Family and Community Medicine. Although these programs have been very successful, students’ activities often overlap in the community areas creating inefficiency, inconsistency, and redundancy.

My AΩA Fellow in Leadership project was to create a longitudinal integrated community health training program for first- through fourth-year medical students. Part of the project was to create a coordinated UTSW community health program.

In order to improve community health training for learners, the project addressed four questions:

1. What percent of medical students participate in community health initiatives? How does this percentage compare with graduating medical students in the United States?
2. What are the perceptions of medical students and education leaders regarding community health training?
3. What types of community health training programs and structure exist in other U.S. medical schools?
4. What gaps exist between community partners’ needs and UTSW community health initiatives?

In conjunction with medical students, a project charter was created, and organizational buy-in was obtained to form the Community Health Initiative (CHI). Alignment meetings with the medical school’s Provost, academic deans, Director of Student Support Services, and the Vice President of Community Affairs were held. A governance council with class representatives was formed, and student and faculty representatives were invited to participate based on previous involvement with community-focused activities at UTSW. The governance council held several meetings to create a roadmap, and identify resources needed to complete the key questions.

Two teams conducted internal assessments of current community health initiatives and perspectives from medical students and educational leaders at UTSW. Two other teams conducted external assessments to analyze community health training programs in other U.S. medical schools, and obtained perspectives and feedback from community organizations partnering with UTSW.

**Internal assessments**

The Medical Student Survey team identified the current community health initiatives at the medical school, and determined the perceptions of UTSW medical students. An electronic survey was sent to 950 medical students. To encourage survey participation, all participants were entered into a drawing for a $50 Amazon gift card.

The Stakeholder Interviews team determined the perceptions of UTSW educational leaders regarding the needs and expectations for the creation of an integrated community health program aligned with the institutional mission. The team conducted 45-minute open-ended response interviews with key educational leaders. Each interviewee was also sent a seven question post-interview electronic survey.

**External Assessments**

The Benchmark team analyzed community health training programs in other U.S. medical schools to determine if they had organized service learning opportunities defined by one of four requirements: activity, hours, reflection essay, and graduation track or distinction.

The team also determined the percent of U.S. medical school graduates who had participated in a community health initiative by reviewing the community health questions on the AAMC Graduate questionnaire.

The Community Partners team determined the gaps between local community partners’ needs and UTSW initiatives using a mixed quantitative and qualitative study
design. The team hosted a three-hour breakfast inviting various community partners and UTSW affiliates to participate in facilitated community needs qualitative discussion. Participants also completed an 11-item quantitative survey prior to attending the event.

Preliminary results

Internal Assessment

The initial evaluation included 243 students (25% response rate), and the primary findings were:
- Students spend an average of six to 10 hours per month in service learning;
- Seventy percent of students are interested in volunteering in free clinics;
- Main benefits of serving include practicing medical skills, learning new skills, and engaging with the community; and
- Main areas of improvements are to provide new clinical experiences, have well-organized and planned activities, and establish effective communication regarding opportunities.

Eleven stakeholder interviews were conducted, and the preliminary findings include:
- There is a need for an integrated approach to service learning at UTSW;
- A coordinated community health program will bring the possibility of working more effectively in the community;
- There is a need for more sustainable projects; and
- There are opportunities to incorporate service learning experiences into the curriculum.

External Assessment

A literature search was conducted, and online website searches were completed to find specific requirements for service learning among medical schools in the U.S. The primary findings were:
- Based on the 2014-2015 AAMC Curriculum Inventory, out of a total of 135 medical schools that participated only 29 reported teaching service learning in any capacity, whether through clinical experience, demonstration, small- or large-group discussion, independent learning, lecture, or service learning activity;
- Out of 49 medical schools reviewed, 26 don’t have any service learning requirements, and 40 do not provide any service learning graduation track or distinction; and
- Although the medical schools analyzed generally offered service learning opportunities, there is a lack of mandatory activities, service hours, and reflection activities.

Fifty-five representatives from 30 community organizations that had worked with UTSW students, and 10 departments at UTSW participated in group exercises and discussions. The main themes identified were:
- Increasing the sustainability of projects, integration of partners and projects, optimizing project development, and expanding outreach and monitoring progress;
- Community partners are satisfied with the types, number, and cumulative working hours of volunteers; and
- Community partners would like to improve the coordination and sustainability of the service learning activities.

Medical students, faculty leaders, and community partners consider service learning to be an important component of medical education, however, an opportunity exists to create a longitudinal holistic community health training program at UTSW. In particular, most of the student-led service-learning activities lack visibility, coordination, and communication.

Across U.S. medical schools, there is a lack of uniformity and requirements for community health training. Consistent with other U.S. medical schools, the majority of UTSW service-learning activities lack learning objectives, an organized process, and requirements. UTSW needs to provide a sustainable, measurable, coordinated approach to community health training, and align student experiences to community needs.

The next step is to explore potential models to create a center of excellence in community health training that provides the infrastructure, resources, support, and training to make an impact in local communities. Prospective partnership with a national organization is in development.

Servant leadership—My inward journey

The AΩA Fellowship offered me unique opportunities for development, and provided for positive changes (internally and externally) in my inward journey of leadership.

Since I started the program, I have received guidance from my mentors, and have been able to participate in regular coaching sessions to recognize, understand, manage, and alleviate leadership challenges.

I attended formal leadership training monthly through the LEAD (Leadership Emerging in Academic Departments) program at UTSW, and was able to expand my network to connect with leaders from AΩA, AAMC, UTSW, and other institutions.

I had financial support that allowed me to develop a database to track services and learning opportunities at UTSW. This is the first time a tool to track those
experiences at UTSW has been implemented and available.

I was able to increase collaboration, and disseminate information about the work that is being done in the community.

I have had multiple abstracts accepted to national and international conferences, two publications were accepted, and my project was presented nationally.

I was able to learn how to apply effective leadership style and tools in my daily activities, and I learned how to formulate, plan, implement, and manage a project.

I faced multiple challenges that allowed me to put into practice the leadership lessons I have learned.

I have changed my “lenses,” and reframed. I have learned to step back from what is being said and done, and consider the lens through which this reality is being created, to understand the unspoken assumptions, and to constantly reflect on the future that I am committed to. I now listen, and practice the art of asking instead of telling.

My journey has led me to leadership.

References

Susan Lane, MD—Development of a Sustained Clinical Rotation for Primary Care at the Shinnecock Reservation Indian Health Center

I am a general internist, and the program director of a large internal medicine residency program. Caring for the underserved, and promoting primary care training, has been the focus of my career. I am passionate about health care policy, particularly work force issues, and graduate medical education funding. Serving on the Alliance for Academic Internal Medicine (AΩA) Health Policy Committee for more than 10 years, and chairing the committee for the past three years, has given me the opportunity to put policy passion into practice.

My AΩA Fellow in Leadership project was to realize a long-held dream to develop a clinical rotation for primary care residents at the Shinnecock Indian Health Clinic, located on the Shinnecock Reservation, at the eastern tip of Long Island.

There are a number of converging factors that make this an ideal time to forge a collaboration of Stony Brook Internal Medicine with the Shinnecock Tribe and Health Clinic. Stony Brook University Hospital leads the performing provider system of Suffolk County for the New York Department of Health DSRIP (Delivery System Reform Incentive Payment) program, whose goal is to meet the Institute for Healthcare Improvement requirements of the Triple Aim—improving the patient health experience, the health of populations, and reducing the per capita cost of health care. Stony Brook is in the final stages of a formal affiliation with the primary hospital that provides clinicians for the Reservation clinic, and is launching new population health programs. This project focuses on chronic disease management; understanding the impact of social determinants of health; interprofessional teamwork; and alignment with the population health efforts already under way.

My project provided an opportunity to engage the Shinnecock Clinic as a learning environment, and improve the health, and health care, of this indigenous population.

An orientation to leadership

On a bright summer day in California, the three 2016 Fellows arrived at the AΩA national office in Menlo Park with anticipation and uncertainty. A gracious welcome from Dr. Byyny (the AΩA Executive Director) at the airport assured me that this would be an individualized, welcoming, and supportive program.

The AΩA fellowship is unique in that the focus is on the inward journey to identify and cultivate one’s nascent abilities in the here and now. Dr. Wiley “Chip” Souba
started us on our inward journey of leadership, and laid our foundation for leadership growth. This fresh approach, and the entirety of the orientation, was like finding a riverbed in the desert. A leader’s overall effectiveness is predicted as much by warmth as by competence. Throughout the year we were enveloped by both.

Following the AΩA Leadership Orientation, I returned to my professional life as an internist and internal medicine program director. Although challenges that had been smoldering at work were flaring up, I noticed that I was paying closer attention to my interactions, reactions, and intentions; i.e., to my “ways of being and acting.” As summer turned to fall, I had made little progress on my project, which I had started with a big vision and big mentors. I came to realize that my initial mentors would likely be very helpful five years into my project, but not at the earliest stages. I needed help at the ground level—how would I develop a relationship with the leaders of the Shinnecock Nation?

It was not clear to me at this point where my proverbial bus was headed, let alone who would be on it. I went down every avenue I could think of looking for connections, and began to assemble a team of professionals interested in primary care, the health of populations, and the social determinants of health.

**Developing a team**

I met with Stony Brook Medicine’s Director of Community Outreach who had previously made an initial connection with the Shinnecock Tribe. She helped connect me with the Director of the American Indian Program for New York State, and we began to explore opportunities to work with the Long Island Native American tribes.

I then connected with the Director of Population Health for the DSRIP program, and met with the Southampton Hospital internal medicine and family medicine program directors to build a coalition of educators supportive of a primary care rotation at the Shinnecock Indian Health Clinic.

Several times, opportunities to change course and abandon my original project arose—often to a much smaller project with a finite end that did not lead back to Shinnecock. I debated changing course to pursue one of these easier projects with my AΩA mentors Dr. John Tooker and Dee Martinez, but ultimately decided to stay the course with my original project, even though it was more challenging.

I had added several people to my team, but had delegated little responsibility to them. Serendipity stepped in. I attended a project management workshop at the AAIM Skills Development Conference, and learned to use a project management tool. I reorganized my project, gained a better organizational understanding of the work, and was able to cast a wider net and make new helpful contacts.

Whenever opportunity presented itself I talked about my project. The more I talked, the more people showed interest, and wanted to be part of the team. A colleague at the Greater New York Health Association invited me to join a task force to create a social determinants of health curriculum. This was an opportunity to collaborate with experts in the field, and incorporate the task force’s findings into my project.

I requested an exemption from the Accreditation Council for Graduate Medical Education, and obtained permission to proceed with the rotation.

**My leadership development**

In late fall, before recruitment season ruled my days, I identified several programs that I wanted to pursue over the next year with my AΩA stipend. Though I have been a member of the AAIM Health Policy Committee for a number of years, much of my health policy knowledge was learned on the job. To more formally develop health policy expertise, I applied, and was accepted, to the Society of General Internal Medicine (SGIM) Leaders in Health Policy (LEAHP) Program. I collaborated with my LEAHP colleagues and organizations outside of SGIM to build an advocacy curriculum for medical students and residents.

I recognized that I had deficiencies in finance and resource management, and heeding the advice of my mentors to “learn how to read a spreadsheet,” I applied and was accepted to the AAIM Executive Leadership program. Shortly thereafter, I was nominated to run for, and was elected to, the Association of Program Directors in Internal Medicine Council.

**Implementing the plan**

Winter had arrived, and I was anxious to move from planning to implementation of my project. A colleague mentioned my project to a friend who has been the dentist at the Reservation clinic for several years. She recognized the need for enhanced medical care at the clinic; however, infrastructure challenges were discouraging for the project.

The dentist and I found ourselves meeting at a social gathering a few months later, and she explained that the new clinic manager was well-organized, enthusiastic for change, and wanted to meet me to learn more about my
project. Finally, on an early spring day, I headed out to the Shinnecock Reservation for my first visit. Talking with the clinic manager, I could tell how much she cared about her patients, and their access to care. We shared a common vision.

In late spring, I met with Dean Kaushansky and discussed my project’s progress, highlighting its synergy with current institutional projects at Stony Brook, including a short track into primary care for medical students, telehealth opportunities, and population health. I developed a “one-pager” outlining the issues, the plan, and my ask. I gave him my project map to show existing and potential connections to institutional initiatives.

My ask was straightforward—I needed his help to arrange a meeting with a representative of the tribal leadership, Reverend Smith, who also holds a seat on the Stony Brook University Council. The Dean introduced me to Reverend Smith, we exchanged e-mails, and a meeting was set.

My main goal for my first meeting with the Shinnecock Tribal members was to listen, learn about their needs, and understand their hopes for their community. I knew that “here-and-now humility” is an essential practice in collaborative projects.2

Reverend Smith was enthusiastic about the project, and welcomed the plan to add primary care services to the clinic. He invited me to return the following week when members of the Department of Health and Human Services Indian Health Service (IHS) team would be visiting for their annual meeting with tribal leadership.

The IHS team meeting was amazing. I was invited to sit at their table and learn firsthand about challenges the Shinnecock Tribe was facing. I came to appreciate the myriad requirements to receive IHS services, including expanded clinical space.

I was humbled to be given time during the meeting to discuss my project proposal, and answer questions from tribal leadership and IHS representatives. I expressed my belief in, and dedication to, the idea that our primary care training program could enhance medical care for the Shinnecock community, now and into the future.

As the meeting came to a close, there was consensus that medical care provided by primary care residents would be part of the future of health care at the Shinnecock clinic!

Next steps

I have been working with a new faculty member exploring opportunities to bring telemedicine and residency training together as part of Stony Brook’s work with the Shinnecock Clinic—an idea I had not even considered a year ago.

I now appreciate that projects that are dynamic, flexible, and evolve with the environment in which they live.

The AΩA fellowship and work on the Shinnecock Clinic project has enabled me to expand my circle of influence—not only geographically within my institution, community and region, but also academically in health policy, curriculum development, and population health. My AΩA fellowship project began, and continues, as a collaborative endeavor to improve health care delivery, and mitigate the social determinants of health for a vulnerable population.

My core beliefs and commitments have not changed, but a different me has started to show up. I am learning that our circle of influence is dynamic. I have learned to pay as much attention to the stillness as I have the movement. Important things happen in the quiet times, and you need to be watching and listening so that you don’t miss them.

I have learned firsthand that you learn to lead through experience, and you develop expertise by doing. Herminia Ibarra’s “outsight principle” describes my AΩA fellowship experience:

...the only way to think like a leader is to first act—plunge yourself into new projects and activities, interact with very different kinds of people, experience with unfamiliar ways of getting things done...your true self emerges from what you do.4

I have heeded the advice of my mentors and coaches, “don’t be afraid to take a chance.” The AΩA leadership fellowship has been a life-changing experience, and I look forward to sharing what I have learned on my leadership journey with my colleagues, residents, and students.

References

“Good afternoon, Ladies and Gentlemen. The probable cause of AIDS has been found...Today we add another miracle to the long honor roll of American medicine and science. Today’s discovery represents the triumph of science over a dreaded disease. Those who have disparaged this scientific search—those who said we weren’t doing enough—have not understood how sound, solid, significant medical research proceeds. From the first day that AIDS was identified in 1981, HHS scientists and their medical allies have never stopped searching for the answers to the AIDS mystery. Without a day of procrastination, the resources of the Public Health Service have been effectively mobilized....Credit must go to our eminent Dr. Robert Gallo [AΩA, Sidney Kimmel Medical College, 1962], who directed the research that produced this discovery.”

—Margaret Heckler, Secretary of Health and Human Services (HHS), April 23, 1984, Washington, DC

Quest for the AIDS virus

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In July 1981, I entered the Epidemic Intelligence Service (EIS) of the Centers for Disease Control (CDC) and was immediately recruited by James Curran, MD, (AΩA, University of Michigan, 2002, Alumnus) to work on an outbreak of infections and Kaposi’s sarcoma among homosexual men. After setting up surveillance for those diseases among previously healthy persons, a case-control study among men in Atlanta, Los Angeles, New York City, and San Francisco was conducted.1

The study identified the two leading risk factors for Kaposi’s sarcoma and/or *Pneumocystis carinii* pneumonia (PCP) as the lifetime number of sexual partners, and meeting partners in bathhouses.2,3 Those results suggested that a novel sexually transmitted agent was involved, and retroviruses soon became a target for the search.

Donald Francis, MD, was convinced that a retrovirus was the cause of AIDS. He based his assertion on his experiences working on feline leukemia virus, a retrovirus, at Harvard University, under Max Essex, MD. Francis
graduated from Northwestern Medical School in 1968, then spent six months in India working on tetanus control. He completed two years of training in pediatrics at the University of Southern California Medical School before entering the EIS in 1971. He was assigned to the Oregon State Health Department, but spent much of his time working on smallpox eradication in Nigeria, Sudan, India, and Bangladesh. In 1975, he started an infectious diseases and microbiology fellowship and received a Doctor of Sciences degree from Harvard in 1979. He returned to the CDC in 1978, and was assigned to the Hepatitis Diseases Laboratories in Phoenix, Arizona.

**Retroviruses**

Retroviruses are RNA viruses with a unique enzyme, reverse transcriptase (RT). RT allows the genetic material of the virus to revert, or reverse, into DNA, enter the nucleus of the host cell, and alter cell growth and replication. In the 1980s, there were three known subtypes of retroviruses.

1. **Oncoviruses or tumor viruses**—Feline leukemia virus is one such virus that causes leukemia, a cancer of white blood cells, in cats. In the 1960s, several investigators, including Robert Gallo, at the National Institutes of Health (NIH), linked two oncoviruses—human T-lymphotropic viruses (HTLV-I and HTLV-II)—to cancers of white cells and bone among humans in Japan and the Caribbean. HTLV-I and HTLV-II cause malignant growths of T-cells, the same cells depleted in AIDS patients.

2. **Lentiviruses or slow viruses**—No known human diseases had been linked to a lentivirus at this time; but a few had been identified to affect animals, such as, visna virus which caused encephalitis (inflammation of the brain), and chronic pneumonitis (inflammation of the lung) in sheep. White cells of monocyte/macrophage lineage are the main targets of visna virus.

3. **Spumaviruses or foamy viruses**—These viruses form large vacuoles in infected host cells, but are not associated with disease in humans or animals. Spumaviruses are generally considered laboratory contaminants when found.

At Francis’ suggestion, Curran invited Essex to come to the CDC in February 1983 to give a lecture on his work with the feline leukemia virus, and explain why he and Francis thought that a retrovirus was the likely cause of the new diseases. Francis arranged to have blood samples from the case-control study sent to Boston to test for antibodies to HTLV-I. Nineteen of 75 (25%) of AIDS patients had antibodies to HTLV-I, compared to two of 336 (0.5%) of control samples tested, suggesting a possible role for HTLV-I, or a related virus.4

As the session was winding down, Paul Feorino, a
virologist at the CDC, mentioned that he had isolated a retrovirus in one of the case-control samples, but assumed that it was a lab contaminant. He suspected, but did not prove, that it was a spumavirus. He then explained that he put the isolate in the freezer. Could this be the agent everyone was seeking?

After the meeting, Feorino tried to re-isolate the agent, but without success. Curran asked Francis to help the CDC labs develop a comprehensive plan to search for retroviruses, and other related viruses. In September 1983, Francis moved to Atlanta to be the CDC’s Assistant Director of Viral Diseases.

The CDC was also working with Gallo at the National Cancer Institute (NCI). Gallo was born in Waterbury, Connecticut, March 23, 1937. He earned a Bachelor’s degree in biology from Providence College, and an MD from Jefferson Medical College in Philadelphia. He was among a select group of scientists who first grew T-lymphocytes in 1976, and later identified a new T-cell growth factor, interleukin-2. Those breakthrough discoveries led to his identification of the first retrovirus associated with human cancer HTLV. In 1982, he received a Lasker Award, considered the highest honor for sciences conferred in the U.S. The award was presented “for his pioneering studies that led to the discovery of the first human RNA tumor virus and its association with certain leukemias and lymphomas.”

In September 1981, following a presentation by Curran on the new outbreak among homosexual men, Curran asked Gallo to join his work on outbreak. Curran suggested that Gallo’s work on leukemia viruses might be relevant; T-cells seemed to be affected by what was causing the problem. Gallo correctly pointed out that his virus, HTLV-I, caused T-cells to proliferate and form a cancer; whatever was causing the new problem was destroying T-cells.

Gallo’s interest in the epidemic was further stimulated when his research fellow, Edward Gelmann, MD, identified proviral DNA of HTLV-I in the T-cells of two patients with AIDS. One was a 32-year-old African-American gay male Vietnam veteran living in New York City. He had intermittent fevers, weight loss, lymphadenopathy and PCP. The second was a 48-year-old African-American gay male from Philadelphia with Kaposi’s sarcoma and extensive perianal herpes simplex virus infection.

When Gelmann tested the same two patients later in their disease course, he could no longer detect proviral DNA. He also could not find proviral DNA of HTLV-I in the next 30 AIDS patients he studied. Why could he find evidence of HTLV-I infection in two AIDS patients, but not others?

A gathering of experts

In the spring of 1983, the CDC received two invitations to attend meetings in Europe. Gaetano Giraldo, an Italian oncologist who associated cytomegalovirus with Kaposi’s sarcoma while working in Africa in the 1960s, organized an international conference to discuss AIDS in Europe. The second invitation was from the World Health Organization to meet to plan a meeting on AIDS.

Giraldo’s meeting was held in Naples, Italy, in June 1983 at the Castel dell’Ovo, a 12th century concrete fortress overlooking the Porto Santa Lucia. The meeting was billed as the first workshop of a European study group on AIDS and Kaposi’s sarcoma. Giraldo and his wife, Elke Beth, also a scientist with an interest in cancer, hosted the meeting, which was prompted by reports of a new group at risk for AIDS—Europeans returning from Africa.

Giraldo and others speculated that AIDS might be an old illness, endemic in equatorial Africa, and related in some way to cytomegalovirus. The meeting included participants from the U.S. and eight European countries, and listed the following goals:

1. Outline the overall spectrum of the disease from clinical, epidemiologic, and etiologic perspectives;
2. Report the most recent data from the U.S. and Europe;

3. Sensitize clinicians and the general public of Europe about the pandemic; and

4. Establish a multidisciplinary European Study Group on the disease to expedite rapid and direct communication and cooperation.

The CDC data through April 26, 1983 was presented—1,361 cases of AIDS reported, of which 40 percent had died. More than 70 percent were homosexual men, but several other groups of patients had been identified including intravenous drug abusers; Haitians living in the U.S. and Haiti; hemophiliacs receiving factor VIII concentrates; female and male heterosexual partners of AIDS patients; blood transfusion recipients; and infants and children of high risk parents.

**A new retrovirus**

Jean Claude Chermann, a virologist at Institute Pasteur, Paris, reported the isolation of a new retrovirus, Lymphadenopathy-associated virus (LAV), from a lymph node of a homosexual male with multiple lymphadenopathy. The virus was propagated in cultures of T-lymphocytes from a healthy adult blood donor, and umbilical cord blood of newborns. At 15 days in culture, reverse transcriptase activity was detected in the supernatant. A retrovirus was observed on electron microscopy of thin sections of virus-producing lymphocytes, however, its morphology was different than that of HTLV-I and HTLV-II. The core proteins of the new retrovirus were immunologically distinct from the two previously reported human retroviruses.

The French were asked to send an LAV sample to the CDC. In turn, the CDC sent blood samples of AIDS patients and controls for analysis to the French team of researchers. Unfortunately, the CDC virologists could not identify reverse transcriptase in the sample, and requested a second sample from Paris, which also did not grow.

**Blood recipients and their donors**

On January 2, 1984, the CDC sent a team to Los Angeles to interview blood donors to four pediatric AIDS cases attributed to blood transfusions. One of the pediatric cases was the son of a prominent Los Angeles lawyer who demanded an investigation of his son’s blood donors, but the Los Angeles Health Department claimed not to have the manpower to conduct the investigation.

As part of the team, I was given a car, a map of the city, and a list of 42 donors linked to the four children. Over the next two weeks, I interviewed 14 of the donors, and linked each child to at least one homosexual male blood donor. A few of the donors were already symptomatic with AIDS-related complex.

While the team was in Los Angeles, Gottlieb had identified two unique PCP patients—one was a blood donor linked to a blood transfusion recipient. He wondered if we could grow the virus from them, and show that the two viruses were identical, and if that would fulfill part of Koch’s postulates. The CDC sent Feorino to Los Angeles to start the viral cultures with fresh blood samples.

The blood transfusion recipient was a 38-year-old woman who was diagnosed with PCP a few weeks earlier. When Gottlieb took her history, she told him that she had developed uterine bleeding 12 months earlier, and had a hysterectomy. She had received two units of blood from two separate donors at the time of surgery. She was in a monogamous heterosexual relationship, and denied illicit drug abuse. Two weeks after surgery, she developed a transient mononucleosis-like syndrome with fevers and fatigue, but did not seek medical care. In December 1983, she was admitted to a hospital for an acute onset of pneumonia that did not respond to antibiotics, had undergone open lung biopsy, and was found to have PCP.

Gottlieb measured her helper-suppressor ratio and it was 0.46 (normal range is 0.9 to 3.7). He contacted the Los Angeles blood bank to see if he could determine the identity of the two blood donors. He found that one of them was a former patient of his, a 24-year-old gay male diagnosed with PCP 10 months earlier. His helper-suppressor ratio was 0.02. The other donor was a healthy male with no apparent risk factors for AIDS.
Identifying the AIDS virus

On April 23, 1984, Margaret Heckler, HHS Secretary, announced that Gallo had found the virus that caused AIDS. She promised Americans that the NIH would have a blood test for the virus within six months, and a vaccine in two years.

The May 4, 1984 issue of *Science* contained four seminal articles from Gallo’s group describing their virus, HTLV-III. The papers documented the two new findings of the NCI, and how they were the first to report the identification of a new retrovirus in AIDS patients, as opposed to a patient with lymphadenopathy, as the French had reported.

They also identified a cell system for the reproducible detection of the retrovirus from clinical samples. The cells were specific clones of a permissive human neoplastic T-cell line.9–12 This cell system provided large amounts of virus for detailed molecular and immunologic analyses, and opened the way for the development of a blood test for detection of antibodies to the virus.

Around the same time, Francis reported that Feorino and colleagues had identified a retrovirus in Gottlieb’s blood donor and recipient pair. The viruses were identical, and the same as LAV reported by the French in 1983. The CDC reported the findings in the July 6, 1984, issue of *Science*.9 This pair of patients fulfilled Koch’s third and fourth postulates of disease causation, specifically demonstrating transmission of an infectious agent to a previously uninfected host with subsequent development of the same disease, then isolating the identical virus.

In the August 24, 1984 issue of *Science*, Jay Levy and colleagues reported isolation of the same retrovirus in 22 AIDS patients, and in healthy gay men in San Francisco. The viruses could be propagated in an established adult T-cell line, HUT-78. Levy named the virus AIDS-related virus (ARV).13

Strategies to attack the virus

Researchers now agreed that a new retrovirus was the cause of AIDS, and strategies to attack the virus were the next step. First, was the development of a commercial antibody test suitable for screening the blood supply. Shortly after Heckler’s announcement, HHS put out a call for candidate manufacturers to obtain licenses to develop a blood test under the pending patent for Gallo’s HTLV-III test. Twenty-five companies applied for licenses, and the HHS awarded non-exclusive, royalty-bearing licenses to seven companies on the basis of experience in working with retroviruses; ability to grow cells in culture for mass production; ability to package, market, and distribute kits in a national system, i.e. millions of assays per year at a reasonable price; and potential for product improvement and refinement.

The FDA worked with the selected companies to facilitate development of candidate donor screening tests. Five companies’ tests were licensed by the FDA:

- Abbott Laboratories, Chicago, Illinois;
- E.I. du Pont de Nemours & Co., Inc., Wilmington, Delaware;
- Electro-Nucleonics, Inc., Fairfield, New Jersey;
- Litton Bionetics, Sunnyvale, California;
- Travenol/Genentech Diagnostics, Cambridge, Massachusetts

Each of the licensed companies pursued a different configuration for an ELISA (enzyme-linked immunosorbent assay) test, but all used a disrupted HTLV-III (virus lysate) as the antigenic substrate—they broke the virus into constituent proteins, and tested for antibodies to those inactive pieces of virus.

By late summer of 1984, the manufacturers were ready for clinical trials. The FDA provided a panel of 18 sera to evaluate their performance compared to the Gallo prototype test.14 Each company was required to demonstrate that test kits were sensitive enough to detect at least the 1:100 dilutions of sera from patients with AIDS, or in ARC (AIDS-Related Complex) and remain nonreactive in populations presumably unexposed to HTLV-III. To demonstrate performance characteristics, the FDA estimated the sensitivity of each kit by reporting results of studies in which patients with a clinical diagnosis of AIDS were tested, assuming that 100 percent of those patients had antibody to HTLV-III. The specificity of the tests was estimated by testing samples from random blood and plasma donors, assuming a zero prevalence of HTLV-III antibody.

By December 1984, enough progress was made on the test kits that the Public Health Service developed three provisional recommendations for screening of blood and plasma for HTLV-III antibodies. First, all donated blood and plasma should be tested for HTLV-III antibodies. Second, all positive units must not be transfused or manufactured into other products capable of transmitting agents. And, third, the donor should be notified if positive (repeatedly reactive) on
the screening ELISA test, or confirmed as positive by another test such as a Western blot.

The ELISA test uses antibodies and color change to identify antibodies to HIV. To conduct the test, the sample serum is diluted at least 100-fold, and applied to a plate containing HIV antigens. If HIV antibodies are present in the serum, they will bind to the HIV antigens. The plate is washed to remove all components not attached to the antigens. A second antibody is then applied to the plate that binds to the person’s HIV antibodies, if present; the plate is washed again. The second antibody is chemically linked (conjugated) to an enzyme that converts a substrate to generate a signal that can be measured, i.e., color, fluorescence. The plate contains the enzyme in proportion to the amount of second antibody attached to the sample HIV antibodies that bind to the antigens on the plate. The enzyme generates a signal in which its strength is correlated with the amount of HIV-specific antibody that was present in the test sample.

The ELISA test is reported as a number derived as the ratio of the signal strength to a cut-off value representing the upper limit of negative controls.

On March 2, 1985, the Abbott test was approved by the FDA, and immediately used by the American blood banking industry (sensitivity 93.4%, specificity 99.8%).

On March 7, the Pharmacia Diagnostics test was licensed (sensitivity 99.6%, specificity 99.2%).

A third test, developed by Litton Industries, was approved April 5 (sensitivity 98.9%, specificity 99.6%).

Government officials applied to the U.S. Department of Commerce for a patent. On May 28, 1985, HHS was awarded a patent for Gallo’s test.

Two additional licenses based on antigens of HTLV-III were awarded in October and November 1985 to du Pont and Travenol, respectively.

On February 18, 1986, Genetic Systems Corp., Redmond, Washington, was approved by the FDA for marketing a test kit based on antigens of LAV, instead of HTLV-III.

A contentious situation

In December 1985, the Institute Pasteur filed four lawsuits against HHS. Lawsuits filed with the U.S. Court of Claims alleged breach of contract, patent interference; damages in the amount of $200 million; and violations of the Freedom of Information Act for review of all NIH laboratory records and memos.

In May 1986, a group of international viral taxonomists declared that all four viruses (Institute Pasteur, NCI, CDC, and San Francisco) reported were identical, and named it human immunodeficiency virus (HIV).

In June 1986, Giraldo held a second European conference on HIV/AIDS, this time in Sorrento, Italy. It would be the first time that Gallo and Luc Montagnier would appear at a conference together. It was now more than a year since the availability of the Gallo antibody test for screening blood products.

Montagnier named his virus “Lymphadenopathy-associated virus” in a 1983 report, and “Lymphadenopathy AIDS virus” in a 1986 report; both designated as LAV. This may have been to counteract Gallo’s claim that he was the first to find virus in AIDS patients.

Montagnier listed the evidence as to why he considered LAV the cause of AIDS:
- LAV is easily isolated from cultured T-lymphocytes of AIDS patients, those with ARC (AIDS-related complex), and asymptomatic carriers from all risk groups.
- LAV replicates exclusively in a subset of T4+ lymphocytes, the same subgroup of cells reduced in AIDS patients.
- The receptor for LAV is associated with the CD4 molecule of T4+ cells.
- LAV can infect non-activated T-lymphocytes but only after mitogen stimulation of the cells.
- LAV can also infect and replicate in bone marrow precursor cells.
- Antibodies to LAV were found in some asymptomatic persons in the various high-risk groups indicating infection with the virus.
- LAV is present in blood products, semen, saliva, cervical fluids, as well as in tissue biopsies of spleen, lymph nodes and brain.17

Montagnier was allotted 20 minutes for his presentation, but he spoke for almost an hour, leaving no time for questions.

Gallo also gave his 20-minute talk in about an hour. He reviewed his work on AIDS, and his virus HTLV-III/LAV (note new dual name of virus). He made four points:

- He and his colleagues had been looking for retroviruses as the cause of AIDS for several years.
- The French had found LAV and associated it with a pre-AIDS condition, lymphadenopathy, but he was the first to find HTLV-III/LAV in patients with full-blown AIDS, and in various high-risk groups.
- The turning point in AIDS research was accomplished by his laboratory, namely establishing T-cell clones permissive for continuous production of the virus. Large-scale preparation of the virus permitted production of specific reagents, and the development of the antibody tests to identify symptomatic and asymptomatic infected persons.
- The genome of the virus suggests the relatedness of HTLV-III/LAV to HTLV-I, HTLV-II, and to animal lentiviruses.18

Gallo proposed a settlement for the 1985 French lawsuits. First, he and the French scientific team would be declared “co-discoverers” of HIV as the cause of AIDS. Second, the royalties from the blood tests would be split three ways—one-third to the Institute Pasteur, one-third to HHS, and one-third put into a trust to support AIDS research in Africa.

On March 31, 1987, U.S. President Ronald Reagan and Prime Minister Jacques Chirac agreed that HHS and the Institute Pasteur would share the patent for the HIV blood test, and future royalties would be split in three parts.

However, there were several findings in the NIH laboratory records provided in response to the freedom of information lawsuit that would disrupt the settlement. On review of electron micrographs of HTLV-III published in May 1984,11 it was discovered that one of the micrographs was of an LAV sent to the NCI by the French.19 This “inadvertent” mix-up established that Gallo had used a French virus in his report on AIDS causation.20 In addition, the Gallo blood test was based on detecting antibodies against

French scientist Francoise Barre-Sinoussi receives the 2008 Nobel Prize for Medicine for her discovery of the virus that causes AIDS. Pascal Le Segretain / Staff
a pool of five viruses, one of which was identified as LAV.9

On July 11, 1994, HHS agreed to cede to the French all future patent royalties, and acknowledged that NIH scientists used a virus provided by the Institute Pasteur in developing the AIDS blood test.

In 2008, the Nobel Prize in Physiology or Medicine was divided—one half jointly to Francoise Barre-Sinoussi and Luc Montagnier “for their discovery of HIV,” and the other half to Harald zur Hausen, a German scientist, “for his discovery of human papillomavirus causing cervical cancer.” Robert Gallo was not mentioned in the announcement.

Note: The views expressed in this paper do not reflect the official policy or position of the Uniformed Services University, the Department of Defense, or the U.S. Government.

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Update on the Aliki Initiative at Year 10

Changing the culture of medicine to know our patients as individuals

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Graduate Medical Education must be judged by the total experience, and not by the hours of work alone. Medical educators need to pay attention to what house officers do with their hours, not merely how many hours they do it.

—Kenneth Ludmerer (AΩA, Washington University in St. Louis School of Medicine, 1986, Faculty)¹

In 2007, an educational experiment to improve the teaching of patient-centered care (PCC) in the era of resident duty hour regulations was undertaken. The Aliki Initiative is now in its 10th year, and has evolved and expanded to a multilevel, interprofessional curriculum that supports the teaching and practice of PCC activities on all medicine teams at Johns Hopkins Bayview Medical Center (JHBMC).

The experiment raised many questions: What was the impact on patients? What was the impact on residents’ learning? Was it sustainable? How could the curriculum be refined, further developed, and expanded to other training experiences?

In the beginning

In 2009, the Aliki Initiative, a novel educational program for internal medicine residents that provides explicit teaching of skills needed to provide patient-centered, humanistic care, was introduced in The Pharos.² This curriculum, the focus of one of four general medicine inpatient teams, provides structured opportunities and tools to help trainees learn more about each patient as an individual—their lives and circumstances outside of the
hospital; their beliefs about health and illness; their patterns of medication adherence; and their preferences, values, and concerns about their health. The curriculum also emphasizes patient-centered transitions of care. By calling each patient several days after hospital discharge, and by making post-discharge visits to selected patients, trainees often encounter surprises that challenge earlier assumptions, leading them to develop a deeper understanding of care needs at times of transition. These assumption-challenging Aliki experiences reinforce the central importance of knowing each patient as an individual.

**Rationale and overview of the Aliki Initiative**

Enid Balint first introduced the term “patient-centered medicine” in 1969, describing the belief that “each patient has to be understood as a unique human being.” The support for the central importance of this approach, and proliferation of definitions of PCC have grown drastically since that time. The Institute of Medicine prioritizes PCC among six core aims to improve the United States health care system, and defines PCC as “providing care that is respectful of, and responsive to, individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions.” Practicing PCC is not only the right thing to do, but also has been linked with improvements in patient-provider relationships, diagnostic accuracy, adherence, quality of life, physician well-being, and job satisfaction. Patient-centered communication is linked with patients’ trust in their physicians; and patients with greater trust in their physicians are more comfortable sharing information, which, in turn, can be critical for diagnostic accuracy, and for crafting management plans to which patients are willing, able, and motivated to adhere.

Some have advocated for teaching patient-centered communication as a core feature of medical school curricula. However, pressures of the clinical learning environment, including workload, work hour regulations, and the need to learn vast amounts of new information and skills, often cause biomedical topics to overshadow teaching and learning of patient-centered approaches in trainees’ experiences. Most residency program curricula lack an explicit focus on patient-centered communication skills.

When educational leaders at JHBMCT considered how to ensure that trainees learn how to provide patient-centered care, it became obvious that this could not be done without first ensuring that trainees know each patient’s preferences, needs, and values. This inspired the creation of the Aliki Initiative at JHBMCT in 2007, with additional attention to optimizing transitions of care and understanding each patient’s circumstances outside the hospital.

Several curricular activities are completed for each patient on the Aliki inpatient general medicine team—conducting a medication adherence review; contacting each patient’s principal outpatient provider(s); and initiating a structured telephone call to each patient after discharge from the hospital. Additional domains of the curriculum utilized for selected patients during the rotation include post-discharge visits to the patient’s home or sub-acute rehabilitation facility, exploring the challenging provider-patient relationship, and a pharmacy curriculum for individualized prescribing.

The curriculum is delivered on one of the four inpatient medicine teaching teams at the JHBMCT, where each team includes two basic clerkship students; two interns working day shifts and a third working the night shift; one assistant resident; and one attending physician. Other team members include a subintern (fourth-year medical student); chaplain and chaplain trainee; clinical pharmacist and pharmacy students; and a medical library informationist.

Rounds are conducted at the bedside, and the student or intern presents to the patient, instead of to the medical team. Delivering the personal history first, and presenting in the second person to the patient, place the patient at the center of the rounds encouraging him/her to be actively involved in the discussion.

**Program outcomes**

The aim of the Aliki Initiative was to change what residents learn, and how they provide care. By several measures, these goals have been met.
On residents’ evaluations of their learning on the medicine inpatient services, ratings for PCC domains are higher for the Aliki team compared with standard teams, including communicating with patients about post-hospital transitions of care, addressing patient medication adherence, and knowing their patients as people. And, residents report no difference in traditional biomedical learning on the Aliki team versus standard ward teams.

On post-rotation evaluations, medical students reported that they found the Aliki rotation to be a particularly patient-centered and positive experience. One student wrote:

I helped take care of a gentleman on the Aliki team during my medicine rotation. He was admitted for pre-renal acute kidney injury secondary to volume depletion in his nursing home. During attending rounds, I was encouraged to present the entire admission history and physical to the patient and his wife as patient-centered rounds. Though the patient had altered mental status, the patient’s wife was extremely grateful for having been included as part of the care team. It was one of the most memorable and rewarding experiences of medical school, thus far.

Patient outcomes have also been positively impacted. Patients’ satisfaction with their physicians, as measured by Press Ganey survey data, was at the 97th percentile on the Aliki team compared with the 47th percentile on standard teaching teams (p<0.01), while control measures such as satisfaction with room cleanliness or food were not different among any of the teams.

Patients with heart failure (HF) who were cared for by the Aliki team had a lower rate of death or readmission for HF within 30 days (4% on the Aliki team versus 14% on the standard teams, p=0.04).

Patients who reported receiving a post-discharge telephone call from their hospital intern indicated that they experienced a higher quality transition of care, as measured by the Care Transitions Measure-3 (CTM-3) (mean CTM-3 score 84.7 versus 78.2 on a 100-point scale, p=0.03).

Interns on the Aliki team called their patients more often after discharge compared to their counterparts.

Culture change

The Aliki Initiative has spurred scholarship and creativity among residents, and continues to pay dividends. The Initiative creates a culture that empowers residents to act as agents of change, and to think broadly about patients beyond hospitalization.

In the years since the start of the Aliki Initiative, residents have begun several new PCC projects, including a focus on the ABIM Foundation’s Choosing Wisely® campaign; a new behavioral health curriculum; and a Medicine for the Greater Good curriculum to give residents the experience of effecting health change within the community, beyond the hospital and clinic spaces. Two residents have partnered with StoryCorps, a national oral history project, to teach housestaff to audio record patients’ life stories. Residents have also created a project to improve care for patients who have required frequent episodes of acute care, and struggle with significant challenges in their home lives.

Curricular enhancement and growth

Several other patient-centered initiatives and areas of curricular development have been spawned by the Initiative.

In the first year of implementation, it was noted in regular, informal interviews with housestaff that the extent to which the curriculum was adopted on the Aliki team varied. Some attending physicians were effective with explicit teaching of patient-centered activities, while others adopted it to a more limited degree. For this reason, a core faculty of experienced educators with expertise in practicing and teaching PCC, and with a commitment to learning and teaching the specific activities outlined in the curriculum, was found to be essential for the Initiative’s success.

Three members of the working group participated in a 10-month longitudinal curriculum development process to create the Aliki Scholars program, an ongoing faculty development program for attending physicians on the Aliki team. Faculty members were invited to be Aliki Scholars based on the quality of their inpatient teaching evaluations, and commitment to being part of an ongoing faculty learning community. After an initial half-day retreat, attending physicians were provided with a faculty handbook consisting of the program curriculum and learner-centered teaching principles.

Aliki Scholars participate in quarterly learning community meetings to continue to refine their teaching skills. This forum has introduced new elements of curriculum, and Scholars share best practices for effective teaching of PCC. Peer observation and learning from colleagues have been essential parts of the program.
Of the 18 original Scholars, 15 continue to serve as Aliki faculty—one Scholar moved to another institution, and two had adjustments in clinical duties that no longer allowed them to serve as ward attendings. Post-rotation evaluation comments by Aliki attendings indicate that they find the experience valuable: “It was the most uplifting inpatient attending stint I have had in over a decade.”

New curricular domains

A patient-centered discharge curriculum was developed through a grant from the Picker Institute. Learners are taught how to consider the patient’s preferences, needs, and understanding of their medical care when preparing for discharge. The central element is a Going Home from the Hospital form used by the team and patient to prepare for discharge. It includes questions to stimulate conversation about discharge planning. It includes a face sheet with the names, photos, and roles of each member of the housestaff team. The material facilitates the discharge process, and primary care physicians have noted that patients often bring the handout to their initial appointment after hospital discharge.

Spirituality is an important part of many patients’ approach to health and illness, and should be incorporated into their care. The hospital chaplain is a key part of the health care team; therefore, an interprofessional spirituality curriculum was developed as part of the Initiative. A clinical pastoral education intern rounds with the Aliki team, and provides input into the care plan.

Curricular evolution and dissemination

When first implemented, the number of admissions to the Aliki team was reduced by one-half that of other general medicine teams. This gave the residents more time to better know their patients as individuals, and to follow those patients through a transition in care. With the enactment of the 2011 changes in the Accreditation Council for Graduate Medical Education (ACGME), the admission numbers on all general medicine teams were reduced; however, the expectation that some of the Aliki activities would be completed for every patient on all ward teams was added.

When the ACGME enacted new program changes in 2011, residency programs across the country responded in differing ways. Given that a reduction in readmissions had already been demonstrated, financial resources at JHBMC were invested in a work reduction approach, as opposed to a work compression or work fragmentation approach. The number of admissions on all general medicine teams was reduced, and Aliki activities, including calls to key outpatient providers and calls to patients after discharge, were incorporated into all ward teams. Each of the other three ward teams has its own curricular focus—high-value care, behavioral medicine, and technology at the bedside. Currently, each of the four housestaff teams admits between nine and ten patients every four days, and each team’s patient census is between seven and 14 patients.

Cost

At the start of the Aliki Initiative, the 50 percent reduction in team admissions required substantial philanthropic funding to support the hiring of hospitalist physicians to care for the subset of patients who were not being admitted by the Aliki team. Funding also supported a full-time research assistant for the first two years of program implementation.

Additionally, during the earliest years, the program supplemented the billing income for each attending physician to offset the reduction in the number of patient admissions. Up front costs to support faculty to develop, implement, and evaluate the curriculum were also covered by the Initiative. These curriculum development costs would not be necessary if another institution adopted the Aliki curriculum, now available on MedEd Portal.

Now that the admission numbers have been reduced on all general medicine teaching teams, supplementation of the billing income of attending physicians is no longer necessary.

The current direct costs to support the Aliki Initiative are modest, and are related to leadership and ongoing research initiatives.

Calculating the overall financial impact of the Aliki Initiative is challenging. Reductions in 30-day hospital readmissions, and in the use of diagnostic tests that may have been rendered unnecessary by clinical evaluations informed by greater knowledge of the patient as a person, must be documented and then linked directly to the program’s interventions.

In Maryland, preventing one HF readmission results in savings of $10,000 to $15,000 for a medical center. In 2014, JHBMC received a $1.4 million bonus from the state, in part, due to lower readmission rates. The degree to which the Aliki Initiative may have impacted this, distinct from many other interventions targeted to reduce readmissions, is unknown.

Patient-centered care in the ICU

In the Intensive Care Unit (ICU), information is often given by the physician to the patient and family with
missed opportunities to understand the patient as a person, explore patients’ and families’ perspectives and goals, and acknowledge emotions. Aliki residents have reported a frequent disconnect between two essential goals of patient care during ICU rotations: stabilizing critically ill patients, and knowing patients as individuals to ensure the care they receive is congruent with their values and goals.

Based on the Aliki Initiative, a new patient-centered curriculum for residents in the ICU is being implemented to address these gaps. Through teaching conferences, interactive workshops, and real-time use of a framework for goals of care meetings during ICU rotations, the aim is for residents to gain comfort and skill with patient-centered communication in ICU family conferences. Residents are learning to use attentive listening skills; explore patients’ and family members’ perspectives; offer empathy and support; consider the life the patient had before the critical illness; and consider the type of life the patient may have if he/she recovers.

To increase residents’ awareness of the long-term effects of critical illness, one teaching conference features patients who were cared for in the ICU, and family members. The patients and their family members return for an interview several months after discharge to describe what the months of recovery have been like, opening learners’ eyes to the often unforeseen challenges that are common in this setting. Additional teaching conferences cover the role of palliative care, how to better estimate prognosis in patients with numerous comorbid medical conditions, and an overview of features of the post-ICU syndrome.

**Interprofessional education and collaborative practice**

The Initiative is collaborating with colleagues from the Johns Hopkins Bayview Department of Nursing, and the Johns Hopkins University School of Nursing to establish an interprofessional collaborative practice model with nursing. A new position for a nurse attending is being piloted; the nurse attending partners with the team’s attending physician to increase the contributions of nursing to team rounds. Nursing students will be part of the Aliki team.

**Lessons learned**

Implementing the Aliki Initiative at other institutions will require significantly fewer resources than when the program was designed, and initially implemented at JHBMC. The curriculum is now well-established, with curricular materials for learners and faculty publicly available. While a core group of motivated faculty is key, this curriculum can be implemented with minimal additional faculty time.

**Taking the Initiative to scale**

The Aliki Initiative teaches how to explore the patient’s perspective, circumstances, and goals, and incorporate these into the plan of care to facilitate smoother transitions of care that take into account the patient’s unique circumstances outside of the hospital. Bedside rounding offers the chance for the patient to be a more active participant in his/her care, and allows opportunities for role modeling, observation, and feedback on communication and other clinical skills. Communicating with outpatient clinicians can be woven into the day’s work.

This curriculum is ready to be adopted in residency programs across the country, and can be easily done with a few recommendations:

- Faculty development is essential. A dedicated group of faculty who are excellent patient-centered clinicians, possess excellent teaching skills, and who are well-versed in the curriculum and part of a learning community is a necessary base.
- The program can be implemented without significant additional time commitment. It is more about doing things differently, than about doing more. For instance, using time at the bedside with patients, exploring their perspective using tools like the Going Home from the Hospital form, or Medication Adherence Review, is time well spent, and can yield information critical to providing optimal PCC and safe transitions.
- There are many curricular elements in the program, and it is impossible to give them all the same emphasis within a given rotation spanning two weeks. The team, attending physician, and nurse should prioritize the elements that are most important for the team’s learning.
- Not all learners naturally make the connection between knowing a patient as a person, and how that knowledge impacts the care of the patient. It is important to help learners make these connections, e.g., why knowing about the patient’s support system is important to his/her care plan after discharge.

The Aliki model of teaching PCC has been broadly embraced at JHBMC, and has proved to be a viable, sustainable solution to compliance with current ACGME duty hour regulations. It has had profound effects on patients, students, residents, and the institution. It is a self-perpetuating, and self-reinforcing, culture change.
Acknowledgments
We thank Mrs. Aliki Perroti for generously supporting the creation of this program, the Johns Hopkins Center for Innovative Medicine for sustaining this initiative; and the faculty of the Aliki Initiative who have worked tirelessly to improve this program and to imbue all of our trainees with the importance of knowing their patients as people. We also thank the residents and medical students who have participated in the program, and embraced its principles. A Challenge Grant from the Picker Institute funded development of the portion of the curriculum focused on patient-centered discharge. Dr. Laura Hanyok receives support from the Josiah Macy, Jr. Foundation as a Macy Faculty Scholar focused on interprofessional education. Dr. Colleen Christmas receives support from the Zimmermann Fund for Primary Care and Quality End of Life Care, and a Primary Care Enhancement Grant from the Health Resources and Services Administration.

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But Momma why?

There, in the dim intensive care nursery,  
One nurse was left alone, her attention cursory.  
Eight little angels were put to sleep,  
But one of them stayed up to weep.

In a small crib, she was lying down,  
Holding a gaze that was about to drown.  
Her fragile face caught my attention  
So I held her in attempt to relieve her tension.

The disturbance in her eyes didn’t emerge from hunger  
Nor was it caused by provocation or anger.  
The nurse looked in my direction to say,  
“She is the one for whom I pray.  
She’s seen the light for less than a week  
And sedating her pain is all we seek.  
Annie is addicted to heroin, you know  
That is why her cries are difficult to slow.”

These phrases struck me like lightning  
I wondered about the monster of addiction,  
Which murmurs bleak tales as frightening  
As the shrieks in Annie’s cries of affliction.

Newborn addiction is a curse that haunts  
Innocent souls that should be dreaming.  
They are left with pain that daunts,  
And leaves everyone around tearing.

Most babies rest with their moms,  
Calmed by a sweet, soft lullaby,  
But here is Annie in my arms,  
Sobbing, asking, “But Momma why?”

Lama R. Noureddine

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Illustration by Laura Aitken
A commonly used route for catheterization is the femoral vein which can be found within the femoral triangle. Please find that the contents of the femoral triangle, from lateral to medial, are femoral nerve, femoral artery, femoral vein, an "empty space", and lymphatic vessel.

Illustration by Nick Love
The Importance of Medical Mnemonics in Medicine

James B. Lewis, Jr., MD, MACP; Rebekah Mulligan, MD; Neal Kraus, MD

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Dr. Mulligan graduated from Texas A&M Health Sciences Center, and is a Geriatric Medicine Fellow at the University of North Carolina Chapel Hill.

Dr. Kraus is a Nocturnist at Porter Adventist Hospital, Denver, CO.

The copious amount of information medical students and residents must learn is often compared to drinking water from a fire hydrant. A creative device to memorize information in medical school and residency is the medical mnemonic, which comes in a variety of forms.

Acronyms, acrostics, and visual and kinesthetic mnemonics are key to learning. Other proven mnemonic devices that can enhance memory include memory palaces, visual imagery, peg word technique, blogs and diaries, flashcards, simulations, mind maps, and algorithms.

**Acronyms**

Acronyms are the most commonly used device, exemplified by SLUDGE as the symptoms of cholinergic poisoning (Table 1). Another time-tested and occasionally revised acronym is MUDPILES (Table 2) providing an...
Medical mnemonics

The instant differential diagnosis of anion-gap metabolic acidosis (paraldehyde is not included since this acrid-smelling medication is no longer used to treat alcohol withdrawal).

**TABLE 1**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>S</td>
<td>Salivation</td>
</tr>
<tr>
<td>L</td>
<td>Lacrimation</td>
</tr>
<tr>
<td>U</td>
<td>Urination</td>
</tr>
<tr>
<td>D</td>
<td>Defecation</td>
</tr>
<tr>
<td>G</td>
<td>GI Upset</td>
</tr>
</tbody>
</table>

**TABLE 2**

<table>
<thead>
<tr>
<th>Acronym for differential diagnosis of Anion-Gap Metabolic Acidosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
</tr>
<tr>
<td>U</td>
</tr>
<tr>
<td>D</td>
</tr>
<tr>
<td>P</td>
</tr>
<tr>
<td>I</td>
</tr>
<tr>
<td>L</td>
</tr>
<tr>
<td>E</td>
</tr>
<tr>
<td>S</td>
</tr>
</tbody>
</table>

**Acrostics**

An acrostic takes the first letter, syllable, or word of each line, paragraph or other recurring feature in the text and spells out another message. An example from a century or more ago is “On Old Olympus’ Towering Top, A Finn And German Viewed Some Hops,” wherein the first letter of each word corresponds to the first letter of each of the 12 cranial nerves (Table 3). The rhyming, poetic quality of this mnemonic also facilitates memory.

**TABLE 3**

<table>
<thead>
<tr>
<th>Acrostic for 12 cranial nerves</th>
</tr>
</thead>
<tbody>
<tr>
<td>On Old Olympus’ Towering Top, A Finn And German Viewed Some Hops</td>
</tr>
</tbody>
</table>

**Visual mnemonics**

Joshua Foer, author of *Moonwalking with Einstein: The Art and Science of Remembering Everything*, wrote:

…”our brains don’t remember all types of information equally well…we are [exceptional] at remembering visual imagery, [but] terrible at remembering other kinds of information, like lists of words and numbers.”

**TABLE 3**

The vast majority of what must be learned in medical school and residency consists of words and numbers. Visual mnemonics allow the brain to associate disparate diagnoses with powerful, easily recalled images. The visual mnemonic for the differential diagnosis of splenomegaly is one example (Figure 1). Causes of splenomegaly are the acronym-proof congestion (cirrhosis and congestive heart failure), collagen vascular disease (lupus), infiltrative diseases, infectious diseases (mononucleosis), hemolytic anemia, and malignancy—C, C, I, I, H, and M. Using a quirky device such as a reversed C in the illustration that looks like a Martian may actually enhance memorability.
Kinesthetic mnemonics

Kinesthetic mnemonics rely on muscle memory (technically procedural memory) to depict the radiological stages of pancreatitis (Table 4). Another is use of the hand to depict a normal serum protein electrophoresis (Figure 2).

**FIGURE 1. Visual mnemonic for the differential diagnosis of splenomegaly**

<table>
<thead>
<tr>
<th>Normal pancreas</th>
<th>Enlarged pancreas</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Peripancreatic inflammation</th>
<th>One pancreatic fluid collection</th>
<th>Two or more pancreatic fluid collections</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image3.png" alt="Image" /></td>
<td><img src="image4.png" alt="Image" /></td>
<td><img src="image5.png" alt="Image" /></td>
</tr>
</tbody>
</table>

**TABLE 4**

**History of mnemonics**

Mnemonic devices originated with the ancient Greeks. The Iliad and Odyssey are thought to contain memory devices that facilitated recitation—literary epithets “rosy-fingered dawn” and “swift-footed Achilles.”

Simonides of Ceos, a Greek poet who lived around 500 BC, used a mnemonic system to identify the crushed...
bodies of more than 50 friends killed by the collapse of a
banquet hall. Simonides, who had addressed the group
moments earlier, retained a vivid mental picture of where
each person sat within the hall. His memory device, later
called the method of loci or the memory palace, was the
first of numerous memory techniques developed by the
ancients. A recent example of memory palaces is illus-
trated in season two of the BBC television series, Sherlock.
Holmes (played by Benedict Cumberbatch) uses a vari-
atation of the memory palace to save himself from a point
blank gunshot wound.

The first major known book on memory, Rhetorica Ad
Herennium, by Cicero, was published in 80 BC. He advised
the association of a passage with a highly memorable,
graphic image.

The early Christians used the Greek word for fish
(ἰχθύς) as an acronym for Jesus Christ. Soon, the visual
image of the fish, without the word itself, was a sufficient
mnemonic.

Use of mnemonic devices reached a peak during the
late Middle Ages and early Renaissance with Thomas
Aquinas, Peter of Ravenna, and Giulio Camiollo, all pub-
lishing memory systems, often with religious themes.
There is speculation that Dante’s Inferno was actually a
type of memory system (memory palace) for learning
about Hell and its tortures.

The golden age of memory began to fade with the
advent of Gutenberg’s printing press. In his dialogue
with Phaedrus, Socrates disparaged writing because he
thought men would devalue their memories and learn
less. Ultimately, he was correct. However, it was printing,
and not writing, that devalued the art of memory. Memory
has been even further devalued with the advent of the
Internet, and the smart phone, which have made memori-
ization the refuge of Luddites.

George Miller, a Harvard psychologist, published an
article in 1956 on the limited ability of the mind to focus on
more than seven things at one time—one possible explana-
tion for the seven digit telephone number. Mnemonics
employ a form of chunking, decreasing the number of
items to remember by grouping them together. An ex-
ample of chunking is the string of digits 1207194109112001,
more easily remembered as the two dates on which the
United States was attacked.

Phone numbers and Social Security numbers are re-
membered by chunking into two or three groups of
numbers. Songs can also be a useful way to chunk large
amounts of material. Small children know this instinctively
by singing the ABC song.

By grouping together the most common symptoms of
cholinergic poisoning into a single word—SLUDGE—the
learner can recall the answer more efficiently.

The neuropsychology of memory

One of the main arguments against using mnemonics
is that they are a “form of decontextualized knowledge.
They are superficial, the epitome of learning without un-
derstanding.” The counter-argument for this encourages
mnemonics as building memories and avoiding informa-
tion simply going in one ear and out the other. Mnemonics
enhance retention, and can also serve as a bridge to a more
comprehensive knowledge base. This is more than just
logic; this is compatible with neuropsychological theory.

Memory is complex neuroanatomically, and is well-de-
scribed in Bennett Schwartz’s book Memory: Foundations
and Applications. The right hemisphere of the brain en-
codes pictures, while the left hemisphere encodes words.
The primary lobes involved are the frontal and temporal.
The occipital lobe is involved in visual memory. The
hippocampus in the temporal area is also involved with
memory, and injury to it can cause an inability to form
new memories.

Encoding is the first step in the memory process. It
is the initial encounter with new information, and the
transfer of that information into memory. It is how we
learn. Encoding is enhanced through writing the desired
information—note-taking, avoiding competing stimuli
(e.g., contrary to popular belief, listening to music re-
duces encoding), use of case-based learning, and use of
mnemonics.

Retrieval is the process by which information is recov-
ered from long-term memory. Retrieval can be enhanced
through flashcards and test questions, as opposed to sim-
ply rereading the desired information. If the information
is carefully encoded with multiple retrieval cues, there is a
much better chance of recovering it.

Rehearsal is preservation of short-term memory
through repetition. Mnemonics work by providing a highly
memorable, rapid cue to retrieval. Rehearsal reinforces
remembering the mnemonic device.

Creation of medical mnemonics

Mnemonics are applied to medical education to as-
sist with the broad base of knowledge one must know.
However, a goal in education is to empower learners to
make their own mnemonics. Self-created mnemonics
appear to work better than acquired ones because of the
encoding that occurs during their creation. Acronyms are
some of the most straight-forward mnemonics that can be created.

The first step in making medical mnemonics is to find a group of topics or common diagnoses and/or treatments that are difficult to remember, but have a similar theme. When working with such a list, and searching for an acronym, think of synonyms to provide a larger choice of letters to use. For example, cancer, neoplasia, or malignancy are interchangeable synonyms, and furnish the letters C, N, or M.

A key to building a successful mnemonic is attempting to use words that can be linked intuitively to the condition and/or diagnosis, and are easy to remember such as CLUBBING (Table 5), which uses the condition’s own name to list its causes. Another common acronymic mnemonic with an obvious link is I GET SMASHED (infections, gallstones, ethanol, trauma, surgery, malignancy, autoimmune, scorpion sting, hyperlipidemia/ hypercalcemia, ERCP, drugs) to determine the causes of acute pancreatitis. Foer explains that the use of off-color, inappropriate images tend to linger longer in memory. However, this would not be appropriate in a professional teaching setting.

To remember the 2013 American Heart Association Guidelines for statin use—LDL>190, known atherosclerotic disease, risk factor profile, 10-year risk>7.5%, and diabetes with LDL>70— the first letter of each of the conditions spells out LARD. The use of the word lard is a trenchant encoding device since excess lard, i.e., fat, either in a patient’s diet or within his/her body, carries a logical link to statins. This mnemonic is easy to remember because of its brevity, uniqueness, and memorable word choice.

Successful mnemonics must be updated intermittently for accuracy. They should also be used every few months to retain memory.

### The role of mnemonics in medical education and practice

The importance of mnemonics in medical education is apparent in the thousands of books and websites dedicated to the topic. An informal survey on Google yields more than 450,000 websites dealing with medical mnemonics, and Amazon lists 423 books on medical mnemonics.

Mnemonics can be applied as checklists to ensure proper care of the patient. Runciman showed retrospectively that the use of the acronym mnemonic COVERABCD could have prevented or mitigated 60 percent of 2,000 anesthetic incidents. COVERABCD includes circulation/capnograph/color, oxygen, ventilation, endotrachial tube, review of monitors and equipment, airway, breathing, circulation, and drugs.

Another acronym used for decades by medical trainees, NAVAL (nerve, artery, vein, empty, lymphatic), helps avoid the femoral artery during central line placement.

The verbal mnemonic FAST alerts a lay person to early indications of stroke: face, arm, speech, and time (to call 911). Use of this mnemonic through a television campaign in England reduced median hospital arrival times by more than one hour.

The rapid availability of the desired information on the Internet has called into question the use of mnemonics, and memorization. Is it an asset to instantly know stuff, or is it more important to be able to find stuff? Intuitively, the argument could be made that “knowing stuff” is critical.

Medical practice consists of interviewing and examining patients, constructing differential diagnoses, ordering appropriate tests, performing appropriate procedures, and maintaining a positive physician-patient relationship. All of these actions require in-depth medical knowledge, and the more quickly the knowledge can be retrieved, recalled, and applied the better for the patient. While information retrieval from web-based resources is an important skill for physicians to acquire, it cannot replace a physician with an extensive knowledge base.

### TABLE 5

<table>
<thead>
<tr>
<th>Letter</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>Congenital, Cystic fibrosis, Cirrhosis, Congestive heart failure, Cyanotic congenital heart disease</td>
</tr>
<tr>
<td>L</td>
<td>Lung abscess</td>
</tr>
<tr>
<td>U</td>
<td>Ulcerative colitis</td>
</tr>
<tr>
<td>B</td>
<td>Brachial AV fistula</td>
</tr>
<tr>
<td>B</td>
<td>Bronchiectasis</td>
</tr>
<tr>
<td>I</td>
<td>Infectious endocarditis, Interstitial lung disease</td>
</tr>
<tr>
<td>N</td>
<td>Neoplasia</td>
</tr>
<tr>
<td>G</td>
<td>Graves’ disease</td>
</tr>
</tbody>
</table>

To remember the 2013 American Heart Association Guidelines for statin use—LDL>190, known atherosclerotic
There are concerns that physicians may become overly dependent on web-based knowledge. In 2010, Jerome Kassirer sounded the alarm with an editorial in *Lancet*:

> To develop expertise in problem-solving and decision-making, it is not enough to learn how to find information. We also need to remember the information and know how to use it.\(^\text{15}\)

Mnemonics are tools to allow compilation of medical knowledge in long-term memory.

In the education of future physicians, continuing medical education and maintenance of one’s medical knowledge are of utmost importance. Foer describes memory as “a spiderweb that catches new information. The more it catches, the bigger it grows. And the bigger it grows, the more it catches.”\(^\text{1}\)

If as educators we can provide learners with the tools to continue to learn and remember beyond the classroom, then we have accomplished the goal of medical education—to create lifelong learners.

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Two of the great civilizing gifts bequeathed by the Middle Ages, medicine and the university, no longer reflect their original ideals. Much time and change have gone by; civilizations adopt and adapt. The monumental effects of the Industrial Revolution now are far surpassed by the development of digital computing, its myriad applications, and the Information Revolution.

The advances in technology, and the ease and rapidity of information transfer have brought sweeping changes in our society. Modernization and advancement are possible without losing sight of the history and ideals of an institution, but it is not easy. The institutions of medicine and the university are caught up in change. The first of these, unfortunately, failed in the transition, and the second is in danger of following the same course.

Medicine, originally the application of art and science for the benefit of the patient, and a visible manifestation of the beginnings of a social conscience, now measures throughput of patients per unit of time. The physician, as we have known that person through history, no longer exists. Technological change and business models govern medical care.

Now, patients are much better served because of the technological revolution, and will be far better served in the future. Medical information is available immediately, permitting standardization and improvement of care. Diagnostics are rapidly becoming portable, cheaper, faster, and personal. It soon will not be necessary for a physician to interpret data; electrocardiograph machines have been doing that for more than 40 years. Better diagnostic medicine is now available to a larger audience.¹

The result is the devolution of medicine into an efficient service industry that provides health care at an acceptable level for everyone, and includes a larger potential patient population than ever before. Most patients would agree that this is an improvement. However, the unanticipated result has been that the intensity of the physician-patient

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¹ This article is a commentary and does not represent the views of the authors or The Pharos.
interaction, one of the closest of human bonds, has largely disappeared.

Physicians who have watched the decline of the stature of a profession that aspired to high ideals would most likely agree with patients on the improvements, but with the reservation that the intangible cost was quite high. The consequences of the application of technology to medicine have been beneficial, and will become more so. However, the consequences of the application of for-profit business models to health care have been disastrous in this country.

If the university, part of the bedrock of Western Civilization, does not benefit from the lessons made eminently clear by medicine, and follows the same path, it would be catastrophic.

The university

Historically, the university, like medicine, enabled an intellectual and social upper class, and laid the knowledge foundation for the advancement of society. Its faculties were granted social status, and the university was set apart from the town to recognize its importance and allow it to focus on the pursuit and promulgation of knowledge. It had a goal to understand the universe in theological and philosophical contexts, and, as the Middle Ages and the Enlightenment progressed, in the context of the natural sciences. The university never was a service provider in the sense that medicine was, but it now appears to be on its way.

Higher education is at risk of losing its historic aspirations and diminishing the value of an intellectual life. It appears to be confounding information transfer with education. Technology makes this easy, and provides appealing ways of presenting information, all of which are good. What could be lost is the contact with the scholar who provides context and perspective.

University years are a time when one learns to think and evaluate. It is an intangible—like the influence of the physician in medicine—but an even more important intangible since education is the milieu that teaches students how to remain intellectually aware for a lifetime. If the ideals of the university are lost, or significantly diminished, along with them will go concepts of abstract truth; ethics; norms of human behavior; the importance of history; the scientific method; and the teaching of things that address the mind and spirit.

There is evidence that this is occurring, yet there is little outcry within the academy except in those institutions that have taken formal stands against this decline—primarily private, smaller, liberal arts institutions. This may presage a two-tiered system maintained by those who can afford it: higher education in the original sense of the term with prolonged faculty-student interaction versus information transfer without the perspective needed to truly assimilate it.

This is conceptually not dissimilar from concierge medicine with its close physician-patient interaction for those willing to pay for it versus corporate health care for the larger audience. Both make use of relevant technology but the former uses it as an adjunct to medicine while the latter simply uses it. In both instances a woman with hypertension would receive medication. But only in the physician-patient interaction would a careful inquiry discern that the real cause of her high blood pressure is her child who has a serious disease. The appropriate management of the mother’s hypertension would be directed to managing her response to the child’s illness. One method of treatment is qualitatively much better even though both receive the same medication, just as students receive the same degrees.

One of the conditions that helped to bring down the classical edifice of medicine was hubris within the medical profession. As a group, little attention was paid to the effects of cost increases, and the fact that many people could not afford therapy was ignored. Physicians practiced their art with little attention to the gathering storm of public indignation.

A similar situation exists today in the indifference of university faculty to the cost of education; retreat into the tenure system when professors are called to account for their behavior; indifference to the poor results of their teaching; some class offerings that are trivial at best; the development of second careers as outside consultants while secure in salaried and tenured positions within the university; the curtailment of free inquiry and discussion while secure in salaried and tenured positions within the university; the curtailment of free inquiry and discussion by unruly student groups; and acquiescence by pliant administrators and pandering faculty.

The appearance of for-profit universities; increasing use of community colleges; the equating of a college education to job training with cost/benefit comparisons; demands to eliminate tenure; an awareness that higher costs have not bought a better education; and the denigration of the teaching profession is the response by the community. Is this not a replay of the ruin of medicine?

The cost of a university education

As with medicine, the cost of a university education looms large in the public mind. The increase in tuition and fees over the past decades—at a time when the buying power of the middle and lower classes has been decreasing—has cast a serious pall over the value of higher
education. It has caused former United States President Barack Obama to wonder aloud if it might not be better for people to get two-year degrees and then a job rather than pay the costs of a four-year college education. This equates education with jobs, and ignores the real value of higher education.

The burden of student loans plays a large role in generating this concern. The public now considers only the immediate cost, and has dismissed the intangible value of higher education.

This is reminiscent of the 1980s and the alteration in health care payment schemes to make health care more affordable. The value of medicine—it could save your life—judged against its aggregate costs caused the public to ignore the potential short- and long-term value, and focus only on the immediate costs. This was for good reason; they were out of control. Families were bankrupted by health care costs, and that immediacy overshadowed potential benefits. The result was the takeover of health care by corporate businesses to bring costs under control.1

When considering the cost of higher education, the argument quickly comes down to tuition and fees, a portly administration, and tenure. It also includes the increasing amenities offered to entice students to a particular university.6–8 All of which are open-ended.

Government aid that once came as grants has transitioned to student loans. The government decided that providing grants for education was not good fiscal policy. According to Best Value Schools and Bloomberg Business, the cost of higher education has surged more than 538 percent since 1985. In comparison, medical costs have gone up 286 percent, and the consumer price index has increased 121 percent.6,7

Higher education is about 4.5 times as expensive as it was 30 years ago. In current dollars, the average cost for all institutions in 1981–1982 was $3,489; in 2011–2012 it was $19,339. Four year institutions over the same time went from $3,951 to $23,066; two-year institutions increased from $2,476 to $9,308, and the yearly increases in college tuition and fees often doubled, tripled, or quadrupled the price increases for other goods.

These cost increases will, over time, exacerbate income inequality by depriving those of lesser means of the education they need. An undereducated population is a dangerous and unpredictable thing.

Universities often respond to questions about disproportionate cost increases by pointing out that few people pay the full amount of tuition and fees because they receive financial aid. This argument is disingenuous. Someone pays the full amount of tuition and fees: it may be the student; alumni donations; government grants to the institution; or some other combination of sources. Financial aid actually is cost shifting, not cost reduction. There appears to be no association between aid packaging (federal and state grants and loans) and changes in tuition in either public or private not-for-profit sectors.

If a service or product is subsidized, people or programs within those organizations will siphon off some of the subsidies. Examples include the military-industrial complex where much of the Pentagon’s increased budget goes to contractors. In medicine, health care provider organizations designed to capture Medicare and Medicaid funds have persuaded the federal government to eliminate negotiations over prices for Medicare Part D medications.

Universities are high fixed cost businesses with a lower marginal cost, much like the airlines and the hospitality industries. The fixed costs are the buildings, faculty, administration, overhead, and ever-improving facilities for students. The marginal cost to add students over and above those needed to validate the existence of the school is relatively small. Since the marginal cost of full tuition for extra students is low, and outside sources of funding exist for students, there is little incentive to contain tuition and fees.

The demand for higher education is sustained by both its perceived and real values. This is a situation guaranteed to drive increases in tuition and fees, expand middle management, and cause private business (for-profit universities) to enter, and capture their own piece of a subsidized industry.
A surprising, and pertinent, manifestation of this is the appearance of for-profit medical education. As reviewed by Adashi, et al.,9 these are not pre-Flexnerian private ventures, but tuition-dependent business models. The admission requirements are strict, and the curricula similar to those of university-affiliated medical schools. With lower cost structures, they may be able to decrease student loan debt, and perhaps adapt more quickly to the changing health care system. They also may ameliorate the projected physician shortage.

A continuing reaccrediting process will be needed to maintain public confidence and guard against loss of quality in the face of demands for more tuition-paying students to sustain profits. There will be a maturation process, but these institutions will probably have an increasing presence in medical education.

As the realization spreads that many jobs of the future will not require a college education but rather training, and the costs continue to rise, the edifice could fail for lack of students. Higher education must cut costs to survive. Consider medicine: nurse practitioners and physician assistants are replacing physicians, and in Colorado there recently was a legislative initiative to allow pharmacists to prescribe for “simple” diseases. This is not necessarily bad medicine; it can be a more efficient use of facilities, but it requires good supervision.

Tuition and fee increases within university systems must return to inflation-driven increases if a university education is not priced out of reach of much of the population. The risk is a two-tiered educational system, and a resultant two-tiered intellectual population.

**Tenure in the university system**

Tenure was designed to protect academicians from arbitrary dismissal. It had its inception in the tradition of free intellectual exploration in Plato’s Academy, and then in Cicero’s Academy in Rome. This tradition was adopted in the Middle Ages in Oxford, Cambridge, Paris, and Bologna with the recognition that free thinking and expression, save in theology and philosophy, was important in maintaining a comprehensive intellectual life. This, in the age of absolute monarchs and rigid social castes, was a powerful message.

Tenure became formalized in the late 19th century and early 20th century in the U.S., largely due to pressure from the American Association of University Professors. It is considered to be a powerful enticement to retain faculty. Historically, it has worked relatively well, but now its potential benefits are being overshadowed by too many reports of faculty who lose the motivation to remain current after receiving tenure; remain in their positions for many years after obtaining tenure; and the lack of a mandatory retirement age. The result is the loss of younger, ambitious faculty, and the need to hire non-tenured, adjunct faculty.

A university faculty composed of short-term contract workers, and tenured faculty who occupy secure positions, demands change. The public perception of tenure has become one of outrageous job security that no one else in the world enjoys.10,11

The entry of outside forces to correct this disparity was inevitable. The tenure system is now in question for both public and private institutions. Lawmakers in Missouri, North Dakota, and Iowa have introduced legislation to eliminate, curtail, or periodically reassess tenure. This is effectively a conversion to a long-term contract model. In 2015, the Wisconsin legislature voted to weaken a state tenure law, and the University of Wisconsin instituted five-year reviews of tenured faculty. Faculty hired at the State College of Florida after July 2016 no longer qualify for tenure.12

**The business of education**

In medicine, technology and the requirement to treat sick people regardless of ability to pay, drove the cost of
medical care to a point where experts were brought in to contain costs. Corporate business failed abjectly at this, but did put together business models that rewarded those who own and manage the business.

Two professions that never were designed to be businesses now either are (medicine), or will be (education). Social unrest and protest, coupled with attempts to go outside the system to reform or circumvent it, are early warning signs. When universities undercut themselves by pandering to critics, and attempt to deflect criticism by using the jargon of business, it will be the end of the game.

Students are now spoken of as customers; business language is used to describe the mission of the university; business people are brought in to streamline operations (perfectly appropriate as long as they confine themselves to operations and not academics); coursework is made relevant by slowly eliminating liberal arts from the curriculum; science becomes the purview of fewer people; and societal ignorance of the scientific method and critical thinking diminishes to the point where anything promulgated by the media is accepted as true.12,13

A Draconian picture was presented by David Gelernter who described the slow loss of the intangible values of higher education, exposure to the humanities, and the consequential loss of perspective and judgment that otherwise would have been communicated to students.14 He believes that 90 percent of U.S. colleges will be gone within the next generation. Teaching, especially in technical and scientific subjects increasingly will be done online. Other ways of demonstrating certification in subjects will appear, and will be the modern equivalents of the apprentice system. In essence, education will decline as information transfer ascends.

Avoiding Gelernter’s prognostication requires two things: recognition that a terrible change is in progress; and a willingness to take serious action to reverse it. Generally, vested interests insulate and delude themselves about reality, and in so doing make it impossible to undertake the actions necessary to correct the situation. Successful reversal of this process must come from within. Change imposed from outside is often disruptive and creates more problems. Medicine is a relevant example.

Whether education will maintain its historical intellectual milieu that encouraged exchange and debate of ideas, and welcomed the exploration of novel or even unpopular concepts, is open to question. In medicine, changes largely affected physicians, and medical care continues to be provided. Corresponding changes in higher education will bring about a loss of intellectual role models; the abnegation of free inquiry; the development of a culture that does not know how to think; and the conversion of education into a business. Society and subsequent generations will be much the worse for it.

References

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Finding strength in my weakness

A reflection on becoming a patient in medical school

Samantha Roman, MD

Samantha Roman is a fourth-year medical student at Johns Hopkins University School of Medicine, Baltimore, MD. She is the recipient of the Harry C. Saltzstein Prize for Medical Writing from the Johns Hopkins University School of Medicine.

I sit, suspended in time and space, staring at the needle hovering above my abdomen as the seconds on the clock stretch into eternity. Holding the syringe, I will my hand to make the quick, dart-like motion and get it over with. In my head, I count:

One…
Two….
Three.

Still no movement. I stare harder, concentrating. Just pretend this is a patient’s abdomen. This would be easy to do for a patient in the hospital.

I decide counting down might work better.

Three…
Two...
One.

It doesn’t. My heart pounding, I exhale. I realize I have been holding my breath. I lean back against the sofa cushions, frustrated and angry. Pulled back into the reality of my living room, my hands have grown cold while the ice pack I prepared, yet unused, has come to room temperature.

It is month two of glatiramer acetate (GA) injections. GA is a first-line disease-modifying drug treatment for multiple sclerosis (MS). MS is a neurodegenerative disease affecting predominantly people between the ages of 20 years and 50 years. The underlying pathophysiology is an autoimmune assault on myelin, the conductive coating around neurons, in the central nervous system.¹

MS is a fascinating disease. It can cause marked disability within days, with symptoms often completely disappearing after several weeks, only to return months or years later, worse than before, or leaving lasting effects. For patients, MS is an omnipresent threat to vitality and livelihood, a game of neurological Russian roulette.

I was diagnosed with MS in the summer of 2016, after my third year of medical school. Though I could not correctly identify it at the time, my first experience, a subtle visual change, occurred while I was studying for Step 1 of the United States Medical Licensing Exam (USMLE). I chalked it up to stress.

My first relapse, a somewhat more worrisome and disabling vision change, occurred as I was nearing the end of my internal medicine rotation. I was terrified to admit something felt wrong, but the medical providers to whom I did disclose reassured me—I remained able to fulfill my clinical duties, and my physical exam was normal. I began to feel like I was going crazy, but eventually the symptoms resolved.

With my second relapse, a more severe iteration of the first, I immediately recognized the symptoms, and the diagnosis was made.

It was recommended I start GA, and, after reading the literature, I agreed. I chose to do the injections manually from the start, as the alternative was a frighteningly loud, spring-loaded automatic device.

At first, the injections were novel, and more intriguing than painful. In the first few weeks, as I rotated through my body’s injection sites—hips, thighs, abdomen, and arms—I learned quickly that I would barely feel the 29-gauge needle if inserted fast enough, but the medication itself promised several hours of pain and swelling. The target was subcutaneous fat. Any deeper, into muscle, and the pain was stabbing and relentless. More superficially, and skin irritation would result in a huge, throbbing, erythematous welt. Regardless of depth, I was assured of a tender nodule for at least a day or two—a constant reminder of my diagnosis.
During those first few weeks of injections, a deep, primal instinct began to condition my body; even as every rational part of my brain fought it, the drive to avoid pain betrayed me. It was taking longer and longer, with increasing anxiety, to take the final action and plunge the needle into my skin. I was beginning to doubt that I could do it.

I thought I had understood and empathized with patients on the hospital wards; in reality, I had been a blissfully unaware bystander alongside an ocean of patient experiences.

Wrestling with the diagnosis of a chronic, potentially debilitating disease during the toughest year of medical school was unquestionably a simultaneously challenging and humbling experience. While the clinical years of medical school are known to be isolating for many students, I found that personal health struggles amplified this feeling, as it also presented me with a new, somewhat uncomfortable role as a patient.

Yet, I thought the need to assume a dual student-patient role in medical school must not be unique. Seeking guidance and comfort in camaraderie, I searched in vain for reflections of fellow medical students who lived with a similar reality. I found none.

Pages and pages of reflective essays written by medical students about clinical experiences or memorable patients abound. I began to wonder why it is so difficult to find reflections about personal health struggles written by medical students. Granted, we are a generally healthy cohort, but statistics suggest there will still be those among us struggling with medical diagnoses.

Literature on this topic is lacking, but from personal experience I believe the reason can be found within the hidden curriculum of medical education. Students learn that self-sacrifice in the name of patient care is valued higher than providers’ own health and wellness.

I was never explicitly told I could not take time off—I never asked—because the implicit message in medicine is that only true emergencies can justify missing clinical time. Never mind that outpatient clinics are only open at times that are impossible for students and residents to attend.

At the time of my relapse, I was not sure anything truly serious was going on. I wanted to make a good impression with my clinical team, and I did not feel I could justify a day off for a scheduled medical appointment. Thus, I prolonged my access to care, passing up a next-day opening, and waiting more than a month for the next appointment to see an MS specialist.

Possibly more influential than the devaluation of provider self-care is the generally competitive environment of medical training, naturally resulting in non-disclosure of any potential weaknesses. I have always found it simultaneously ironic, frustrating, and mildly amusing that each level of academic training promises reward at the next in exchange for excellence. This ultimately escalates into an unrealistic level of perfection: excellent high school grades and SAT scores are required for admission to a well-regarded university; a superb GPA and MCAT score in college are required to attend medical school; stellar USMLE scores and clinical evaluations are a necessity to match at a top residency program. The cycle marches on through residency, fellowship, and beyond. It is no wonder medical student reflections on personal experiences with chronic medical diagnoses are limited—to do so may be perceived by some to publicly admit weakness.

I write about my MS diagnosis for personal catharsis—to name my anxieties and fears, and let them go onto the page. I write so friends and family outside of medicine might understand my experiences on the wards. I write to share my thoughts and feelings with other medical students—those who feel isolated in their personal struggles; those who are navigating the waters of learning to be both a provider and patient; and those who hide an illness for fear of being perceived as weak. Despite often superhuman expectations, health care professionals are not high-performing medical robots; they are flesh and blood, and carry human heartaches and triumphs throughout medical training and practice.

We all have weaknesses. To pretend otherwise would be a lie. But acknowledging one’s shortcomings, and asking for help to overcome weaknesses, is perhaps the truest indication of strength, humility, and self-awareness. Personal struggles, which may be perceived as weaknesses by some, do not necessarily make us weak; on the contrary, they may strengthen us in other ways.

Our suffering, our struggles—our acquaintance with deeply emotional human experiences—will make our empathy stronger, and our relationships deeper. Ultimately, it will make us better physicians for our patients.

References

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When you reach 70
You're always walking into the wind
Only to find yourself at the urinal
Again

And as one, then another
Young buck with stallion's flow
Sidles up to the tank

You look longingly down
For the hydrant blow
Of long ago

So, stuck in the puddle
Of urge and age and t-i-m-e
You close your eyes
And catch a few zzzzs

Only to awaken
Strangely refreshed
And drained
Ready for more wind
More rain

Martin Kohn, PhD
The Army Medical Corps Reserve in World War I:

Centennial notes and letters from the front

by Francis A. Wood, MD

Earl LeRoy Wood, 1917.
Dr. Wood (AOA, Weill Cornell Medical College, 1950) is a retired private practice neurosurgeon. He was a Diplomate of the American Board of Medical Examiners in 1952; a Diplomate of the American Board of Neurological Surgery in 1960; and a Fellow of the American College of Surgeons in 1962.

On April 6, 1917 the United States declared war on Germany and officially entered World War I, also known as The Great War. Woodrow Wilson had just been re-elected President of the U.S., using the campaign slogan, “He kept us out of war,” to appeal to those voters who wanted to avoid war in Europe. However, an intercepted telegram from German Foreign Minister Arthur Zimmermann to his ambassador in Mexico promising support for Mexico’s acquiring U.S. territory in the southwest in return for its joining the war on the German side infuriated Americans when it became public. It became no longer possible for President Wilson to keep U.S. troops out of WWI.1

The British immediately asked for doctors since they had already been in the trenches for three years, and needed replacement personnel. A call went out for young American doctors to join the Army Medical Corps with the understanding that they would be assigned to service with the British Expeditionary Force (BEF) in France. More than 1,400 physicians volunteered, including Earl Leroy Wood.

A history of volunteerism

Thomas Jefferson Wood was born January 31, 1843. He was 18-years-old at the onset of the Civil War, and enlisted with the North. He initially signed up for a three-month tour of duty, but after the battle of Bull Run, called Manassas in the South, it was obvious that the war was going to last more than just a few months, and soldiers were encouraged to re-enlist for three years. Wood did so.

He was First Sergeant of Company I, Second Regiment of Delaware Infantry, and fought at Antietam and Gettysburg, where he was wounded. After the war, he was married three times (widowed twice). Amusingly, each of his wives was named Mary, and two, unrelated, were Mary Miller!

Earl LeRoy Wood, born in 1894, was the child of Thomas’ third marriage. Thomas was killed in a railroad accident before Earl was born, and his widow, Earl’s mother, moved to Newark, NJ, where she worked as a school teacher.

Earl graduated from high school in 1913, and was accepted by New York Medical College. At this time, young men could graduate from high school and directly enroll in medical school—a college degree was not required.
Earl graduated from medical school in 1917, and answered the call from Washington to join the Army Medical Corps Reserve. He reported for active duty August 2, 1917.

Throughout his deployment, Earl frequently wrote home to his mother in Newark, NJ, often twice a week.

The U.S. Army Medical Corps Reserve of WWI

The early physician volunteers were sent to Fort Benjamin Harrison in Indiana, Fort Riley in Kansas, or Fort Oglethorpe in Georgia, for a few weeks of training that included map reading, field sanitation, litter drill, wound care, basic French, and horseback riding. In the British army it was customary for officers to be assigned horses for transportation.

After their training, the volunteers, now officers, went to England, generally in small groups, with a few days stop at Halifax, an assembly spot for crossing the Atlantic in convoys. The trip from Halifax to Liverpool, depending on German submarine activity, could be interrupted by a stop in Ireland. From Liverpool, the doctors entrained for London.

Of the physicians in the Medical Corps Reserve, the more senior ones, especially those on medical school faculties, were organized into six general hospital units. The others, about 1,200, were assigned to combat units as battalion medical officers or field ambulance personnel.

Of the 1,427 Medical Corps volunteers who signed up when the U.S. entered the war, 37 were killed in the line of duty, 250 were wounded, and a number were captured and held as prisoners of war. Earl was among those wounded, and along with 163 others, received the Purple Heart.

Soon after arrival in London, 1st Lieutenant Wood, along with one other American doctor, was assigned to duty at the Cherry Hinton Military Hospital, a 700-bed hospital in Cambridge, staffed by 10 doctors.

Wood’s letters from this period highlight the difference between the daily customs of British and American officers. The British wore the Sam Brown belt and spurs, and carried canes, which Wood wrote, “Make the men look much more like officers than the American officers do.”

Wood was able to take advantage of some of the differences offered by the British army, such as:

One thing that officers in the British army have that is absent in the States is servants [sic]. Each officer has a servant to polish his boots, puttees, belt, etc., keep his clothes in condition, and to run his errands. This saves me time and drudgery, as of course, I have one over here.  

The servant was an enlisted man, called a “batman,” and was a fixture at the front in France as well as in England. Wood and another American physician shared quarters in a boarding house in Cambridge.

The old lady who runs the house where I live is a very dear old woman. She has adopted me and is doing her best to mother me. Last night I washed a dozen handkerchiefs and left them to dry. When I came home this evening I found that she had ironed them all for me. I got my first wash back today from the laundry and she cautioned me about putting on fresh underwear right from the laundry as it might be damp. She told me to let her have it to warm and dry before a fire lest I get the rheumatism. And she wants to see that all the buttons are sewed on. Isn’t that nice of her?

In addition to his hospital duties, Wood, like many other soldiers, had the opportunity to tour Cambridge and the surrounding area, attended lectures, and was often invited for dinner by British officers and their wives.

The 38th Field Ambulance Company

In December 1917, Wood, his roommate, and several other Americans were sent to LeHavre, France. Upon their arrival they were required to attend gas school. “We were given a gas mask, taught the use of it and then sent into the real German poison gas as a test. If you come out all right you know your mask is OK. If the gas kills you, you know the mask is defective. Rather a good way of finding out, don’t you think?”

From LeHavre, via Rauen, Wood was sent to the 38th Field Ambulance Company.

In 1917–1918, the BEF was composed of squads, platoons, companies, and battalions. The basic numbered and named units were the battalions with 600–800 fighting men at full strength, commanded by a Colonel. Each battalion had two or three line companies, plus a headquarters company to which a medical officer (MO) was attached. Each MO had his batman, a sanitary inspector, and a few aid attendants. To assist the MO, several riflemen in each company received instruction in first aid.

Battalions formed brigades, brigades formed divisions, divisions formed corps, and corps formed armies. Each division had nine battalion MOs, and each brigade was signed a Field Ambulance Company commanded by a Lt. Colonel, and consisting of four to six MOs, and supporting personnel. The Field Ambulance Companies evacuated the wounded from the battalion aid posts, where the battalion
Dear Mother,

Today, I received your letter which mentioned so many things. I have been thinking of you almost every day. I was thinking about how you are doing and how you are managing life. I hope you are all well and doing fine.

I am in good health, and I am learning new things every day. The training has been tough, but I am managing to adapt. I am learning how to use weapons effectively and how to handle them properly. It is not easy, but I am trying my best to learn.

I am also learning about the importance of teamwork and the need for discipline. I understand that these are crucial components of the army. I am trying to follow them to the best of my ability.

I miss you and the family very much. I hope to see you soon. Please take care and keep in touch.

With love,

[Signature]
The battalion aid posts were some distance from the frontline, but at times of intense fighting, if the frontline retreated, it could approach or even overrun the aid post.

Much of the work of the MOs took place at night, when the line was subjected to intense bombardment and gas shells. The MO and his assistants had to work wearing gas masks, often for hours at a stretch.

By March of 1918 the vast majority of MOs serving combat units in the BEF were Americans.

One of the bravest MOs was William J. McGregor, MD, of Wilkinsburg, PA, who lost both of his legs during battle.

At Haverincourt Wood, just east of Bapaume Road near Cambrai, McGregor was serving with a machine gun battalion in March 1918, during a major German offensive. McGregor was dressing his wounded as were countless other doctors on this front, seldom eating and never sleeping. Slowly retreating, working like mad to take care of those men who could not get themselves back before the Germans came upon them, McGregor was soon working wherever and whenever he could, his battalion of machine gunners having long since been dispersed, their guns captured or destroyed, and the personnel having been assigned to various infantry organizations as they came along.

On the 29th of March one of the salvos of 5.9s, which came over, landed on McGregor. Although severely wounded in both legs he did have the good fortune to be rescued before the Germans got him. Wounded at 6:00 pm, he was operated on the following morning and sent to England.³

The MOs worked. Ideally the battalion aid posts were some distance from the frontline, but at times of intense fighting, if the frontline retreated, it could approach or even overrun the aid post.

MOs also family practitioners

BEF volunteers also cared for local French citizens. During January and February of 1918, when the front was relatively quiet, the field ambulance company to which Wood was assigned was encamped some miles behind the frontline, and Wood was called to serve as family practitioner to the local French population. He held sick call, delivered babies and did a few operations. In January 1918 he wrote:

This certainly is the job as headquarters medical officer. It suits my taste more than anything I have had so far. I am absolutely my own boss but have lots of work to do. The work however is of the kind I like, and is more like civil practice than anything else. I hold office hours three times a day at 9:15, 2 and 6 p.m. At these times the soldiers and French people can come to see me. In between times I visit the cases that notify me. I have really more of the French population to treat than British. And they vary to include everything. I had two babies today among others, a French officer, numerous French men, and one man’selle. She was inclined to be a bit hysterical, and the old game of holding her hand and soothing words, although she couldn’t understand them, worked even over here. One of the high strung French men whose hand I had to lance this morning fainted on me three times before I could get him out of the office. So it goes. I shall be sorry when this ends. I think I enjoy treating the civil population, and talking my poor French to them, more than anything else.²

Four days later he wrote:

I am enjoying this job more than anything I have had since I left England. It is more like general civilian practice than anything else. I had one case of insanity come in today. I
visit the four week old baby every day, and it is doing nicely. I operated on the foot of a nine year old boy today and he was certainly a brave little poilu. The generals and colonels are coming along nicely. I was very much shocked when I visited the baby today by a French custom which I discovered. The mother has more milk than the baby will take but she explained "J'ai un petit chien, ii est nécessaire," meaning that she has a puppy dog and she nurses that on one breast and the baby on the other.

But all good things eventually come to an end, and Wood was reassigned as a battalion MO in the 7th Suffolk Regiment, where he was wounded.

I had the experience of being wounded...now don't get worried—wait till I tell you about it. I was standing outside my dug-out scraping a few tons of France off my boots when a shell burst close by and a piece caught me in the back right over the left kidney. I let out a yelp, straightened up for a few moments, and then finished my boots. It was quite trivial. When I took off my clothes to have my corporal fix it...it turned out not to be a serious wound—no fractured ribs, no penetration of the pleural cavity, but it caused a lot of pain for a while. It was a rather good thing to remind me that there is a war on.

In March 1918, the Germans launched a major offensive in Flanders. Wood wrote:

Everything is going along nicely except that life isn't the most pleasant sitting in a shell hole with rain pouring down on top of you and bullets whistling by just scraping the top of your head. It is my opinion that the American doctors with the British army have seen more real fighting than any officer with the American army. I saw a New York Times a few days ago and found it very amusing to see a whole column given to six wounded soldiers in the whole army. My own battalion could have several times that and we'd think nothing of it.

Relief of a battalion on the frontline was a heavenly experience. Lt. Cornelius McCarthy, who won the Military Cross for Valor, described the relief:

This relief was indeed trying. For several weeks in and out of the line with casualties equal to their entire strength, the men and officers of the division had been hammered and pounded, far beyond the ordinary conception of human endurance. Yet, they performed as only those who were with them know. The headquarters and aid post personnel were the last to be relieved. When everyone else was gone the Colonel, Adjutant, and doctor mounted their horses in the pitch dark of a moonless night and started for good food, clean beds and a night's rest. To the uninitiated, anywhere in France was dangerous and terrible. To the soldier on the line, a rest area five miles behind the front line was a paradise.

On April 12, 1918, Wood wrote his own account of being relieved:

We have come out of the line and are now in reserve. Isn't it surprising how promptly things can change from positive hell to a sort of heaven? I suppose it's the hell that you've been through that make even slight pleasures seem heavenly. We were in the very worst trenches for seven days—deep mud and continual rain. Of course, we couldn't wash or shave all this period, or sleep properly, and the Boche shelled and gassed us continually. The whole battalion was sick, and I ached all over. We all felt dead beat and would have been glad to die and get out of it all. Then we were relieved, and the weather changed. We came back, got a wash and shave and some clean clothing, and above all, some proper sleep and became as cheery as could be. You would think we had never known a care or a worry in the world. We are camped on a beautiful hillside, and when the sun is up it is so warm that we just want to lie on the grass and browse in it. We eat all our meals in the open. Yesterday, the Colonel and I went for a ride. We went off the road and galloped across beautiful fields, jumping the ditches. I have a splendid horse. I had difficulty in recalling that two days before I was in as much of a hell as has ever been produced on this earth. It's a good thing that we forget our cares promptly, and only recall our pleasures.

One amusing thing came to my ears today. One night after I completed my tour of the trenches through the driving rain and mud, the Adjutant asked me for an informal report on the condition of the men, so I wrote him one. Today, I heard that when he got it he turned it over to the Brigadier General who sent it straight to the Army Headquarters, the famous General Byng, and it was that report of mine that got us relieved. [Julian Byng became Governor General of Canada after the war. His wife initiated the Lady Byng Trophy for good sportsmanship in the National Hockey League.]

In your letter you said that you would try to have Mr.
Gray intercede for me and get me transferred to the American army. Really Mother, I don’t know as I want him too. I know that I have the worst and the most dangerous job that a doctor can have, but again there is something fascinating about it. Unless you are right in the trenches you don’t really see the war, and I have that advantage. And again, the greater your hardships and privations so much more greatly you appreciate your pleasures when you have any. It takes a real man to be an infantry officer at the front—there are many that come out and don’t last long and I don’t want to be a quitter if I die in the attempt. I don’t want to ask for any favors in this matter. If I am relieved in the due course of time—all well and good—I’ll take anything that comes my way normally but just because I am in danger and things are going badly I’m not the one to put up a white flag and ask for an easy job. If I have a tough position and hold it down—if I am spared—when it’s all over I can say that I am just so much more of a man than the other fellow. It’s all a gamble with life—I could get an easy job free from danger if I would sacrifice my self respect but I haven’t lost faith in the Almighty yet, and if I come through I’ll have my reward in knowing that I have run my race and finished the course as He would have me do. I have seen many fine men go but isn’t it possible that they go from a small life that we hold so dear to a greater being so beautiful that it is beyond our conception? Let me stick where I am—and when the way is hard I’ll drive myself forward and put my faith in Him.

However, the war went on, and the respite period came to an end:

We are back on the line again and having a rotten time. I am afraid that either I’m not old enough, or I’m not hard enough, but it makes me sick all over to see the two sides of the world competing against each other and using all their brains and ingenuity to devise the most horrible way of destroying one another. When I see what has been a happy man ten minutes before blown suddenly to the four winds of the earth I can’t help but shudder. Still, will stick it out and do as He directs, though the Devil seems to be in command of the earth.

In May 1918 Wood was hospitalized in Rouen for a serous case of scabies and trench foot—both the principle cause of disability in the front line troops. He was also suffering from recurrent attacks of sinusitis and headaches. These conditions necessitated Wood being sent to England, and admitted to a small hospital in London where he was seen by a specialist who recommended sinus surgery. However, Wood had lost so much weight in the trenches that surgery was postponed until he had spent several weeks in a convalescent hospital in Surrey, and regained some weight. His days in Surrey were not spent lying in a hospital bed, but were filled with tennis, golf, dances, visits to Parliament, and tea with the Duchess of Marlborough, Consuelo Vanderbilt.

On August 16, 1918, he wrote:

I suppose you often wonder what I am doing just buzzing around this way, enjoying myself and leading a thoroughly enjoyable life when there is a war on. I worked very long and hard for months, very close to death at times, and when I am given the opportunity again for a little life I feel I’d be ungrateful if I didn’t make the most of it.

Wood underwent sinus surgery in September 1918, but the Medical Board felt he should not return to France, and assigned him to the Rochester Row Military Hospital. Although a military hospital controlled by the army, it was comparable to the Veterans Administration hospitals in the U.S.

In the spring of 1919 Wood was discharged from service with the British. He came back to the U.S. to an internship at
Newark City Hospital (how dull that must have seemed after all he’d been through!), and family practice in Newark. He trained in otolaryngology and learned bronchoscopy from Chevalier Jackson, MD (AΩA, Raymond and Ruth Perelman School of Medicine at the University of Pennsylvania, 1928, Honorary) in Philadelphia.

Wood remained in the Army Medical Corps Reserve, took courses, attended meetings, went to summer camps, and advanced in rank. In the late 1930s, he was promoted to Colonel, and not long after Pearl Harbor he returned to active duty. He spent two years as station hospital commander in southern California, and the last year of World War II as commanding officer of a base hospital in New Guinea whose principal mission was to support MacArthur’s Philippine campaign, which he also supported by traveling to Leyte to select sites for medical facilities.

After World War II, as the senior reserve medical officer in New Jersey, he assisted medical lieutenants and captains with their applications for residencies and hospital appointments.

In the early 1950s, Wood suffered two myocardial infarctions, and retired from practice. He developed an interest in opera, and on formal occasions was proud to wear his Purple Heart ribbon, and ribbon denoting service with the BEF in World War I. He and his wife, Flora, visited France on several occasions and made a number of friends, but Wood never mastered more French than the few words he used to console a hysterical mam’selle in Flanders half a century before. Wood died in 1982, at the age of 87.

American physicians who served with the BEF were an extraordinary group of men dedicated to helping and healing others.

Thirteen hundred medical men were selected from among the patriotic many who volunteered to fill our quota. They came from every portion of our country as soon as the need was made known. One and all, they realized that they were untrained as soldiers, and that they were to be placed side by side in competition with medical officers who had endured the hardships of two years of war—men who had earned promotion by long service, and who would outrank each and every one of them. Nor would they be privileged to serve with their own companions under their own flag; but one by one, individually, they would be ordered to serve with strangers, men of a different nation; and under a foreign flag....not one of these patriotic men hesitated for a moment. No one who had to do with this brilliant chapter of the volunteer army of the reserve corps in The Great War but was thrilled by the self-sacrifice of the young doctors, their intense patriotism, and the magnificent and noncomplaining manner in which they endured their many hardships.3

Surely, this was a bright chapter in the history of American medicine.

References

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When Human Voices Wake Us
Jerald Winakur
Kent State University Press, Kent (OH), 2017, 96 pages

Having and Keeping
David Watts, MD (AΩA, Baylor College of Medicine, 1965)
Brick Road Poetry Press, Columbus (GA), 2017, 97 pages

Reviewed by Peter Pereira, MD

Jerald Winakur’s When Human Voices Wake Us, the latest volume from Kent State University’s Literature and Medicine series, spans a 40-year career in medicine. Poems such as “First Do No Harm,” and “To the Medical Student Who Jumped From the Roof of the Hospital” explore the demands and expectations of medical training. Others like “Blown Pupil,” “Breast Exam,” “Out of Practice,” “A Sigh on Rounds,” and “Discharges” explore the challenges and joys of a busy medical practice, and eventual retirement:

I recorded demise  
in a radiant scrawl  
but there were never  
enough flowers.

The medical poems are deepened by poems that explore Winakur’s family history. He remembers a beloved grandmother who died of pancreatic cancer in “Forest Hills Park, Spring 1994,” and a father lost to Alzheimer’s in “Blue Period,” and “Mowing.” The poet reveals:

…it must have made him strong  
since he lived long enough  
to forget his name  
and then my own.

There is pathos, as well as humor, in this collection. “Plastic Caskets” takes life-after-death to its absurd limits. “The Teens for Christ Convention at the Holiday Inn” humorously juxtaposes teen celibacy and adult intimacy. “Sideshow” exposes the great circus of for-profit medicine where “poisons/pummel Mister Neoplasia,” and “heart-stopping spells/of fatal fibrillation …/shocked and dazzled by joules.”

There is an ekphrastic poem with its all too real photograph of an elderly woman alone on a street corner “Raising Money for Medical Bills.” And, there are wonderful love poems for Winakur’s wife, Lee, “A Paper Anniversary at 52,” and “Overwinter.”

There is a forward by poet Alan Shapiro, and an introductory essay by the author that incorporates lines from T.S. Eliot’s “The Love Song of J. Alfred Prufrock” as a touchstone for the poet’s musings about medical training and a life in medicine. “I was formulated, pinned…patient encounters measured out with coffee spoons…I no longer heard the singing.”

Winakur urges physicians to be attentive, and to hear patient’s human voices. He also urges physicians to be attentive to their own deepest selves. In “Auscultation” he encourages:

Between the endless rounds  
the endless dyings  
still beats  
a poet’s heart.

The doctor’s stethoscope, clutched to his own chest is a touching final image that closes the book.
**Having and Keeping**

David Watts is a Clinical Professor of Medicine at the University of California, San Francisco, and a Professor of Poetry at the Fromm Institute. His new book of poems, *Having and Keeping* (his 17th), is less about the practice of medicine, and more about the life of a poet who also happens to be a physician.

The book opens with a series of poems about Watts’ family—a father who was a farmer, a mother who was a musician, and a brother who served in Vietnam and later suffered from post-traumatic stress disorder. Each of these family members has now passed, and Watts’ poems are a way to:

Tie Knots in the Strings of Memory
and tighten them against forgetting.

There are several poems about love, relationships, marriage, and divorce, including “Pleasure,” which is a wonderful meditation on remembering the solitary joy a past partner felt in her passion for running, and how if:

pleasure remains in the world
despite sorrows...Who should refuse beauty,
then?

“Invisible Disgusting Things” “Empty,” “After Long Silence Running into My Ex at a Family Gathering,” and “Affair” continue a narrative of loss and disconnection:

He didn’t know how it started
but he did know that inside
the pleasure was a loneliness
he could not fill.

These are followed by poems about new love and family found, including “The Woman I Love in Mountains,” “Family Bed,” and “What it Was,” which is a delightful poem about the mysteries of in vitro fertilization:

Well, they asked again, is it sex
if it happens in a Petri dish?

Watt’s poems are wonderfully imagistic and narrative. “Perfection” is a poem about the body of a woman exercising at the gym:

Her spine pushes through her skin
like a brontosaurus erupting
from its tar pit.

He also shows a great ear for language in a series of humorous poems made from phrases spoken by his young son, Gabrielle, “Things My Son Told Me,” “Gabriellisms,” “More Gabriellisms,” and “Gabriellisms IV.”

There is an intimation of impending decline, illness, and death in “Family Away, Empty House,” and “Longevity.” Watts seems to have found a way to find joy in life, and in language, and perhaps to truly understand the difference between having and keeping.

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**Voracious Science and Vulnerable Animals: A Primate Scientist’s Ethical Journey**

John P. Gluck
The University of Chicago Press, Chicago, 2016, 360 pages

Reviewed by Jack Coulehan, MD (AΩA, University of Pittsburgh, 1969)

When I was a first year medical student, one of our physiology lab experiments dealt with cardiovascular dynamics. We performed surgery on anesthetized dogs, opening their chests and measuring cardiac function with various instruments. Afterward, the dogs were euthanized.

We worked in groups of four, so 36 dogs were sacrificed for our class to observe in situ hemodynamic processes we had already learned by lecture and textbook. As far as I’m aware, none of us questioned the ethics of this exercise. If the question had arisen, I’m sure we would have thought it obvious that the good achieved by educating 144 future physicians surely outweighed killing 36 dogs.
Not too many years later, my medical school, in one of its many curricular changes, eliminated the laboratory component of physiology. No more dog surgery. Yet, somehow students still managed to master cardiovascular physiology.

In *Voracious Science and Vulnerable Animals*, John Gluck describes an almost identical teaching protocol that went before the University of New Mexico’s Institutional Animal Care and Use Committee (IACUC) in the mid-1980s. The committee approved the protocol, but several members, including Gluck, decided to observe the cardiovascular exercise in practice. They found that the dogs were inadequately anesthetized, improper cauterizing devices were used, students were confused about proper surgical methods, and an arrogant professor seemed indifferent to all of these problems.

Was this experiment conducted in an ethical manner? Was the sacrifice of these animals morally justified? Gluck describes his growing realization, over several decades, of the salience of such questions, and his internal struggles to resolve them. He began his career as a PhD student in psychology at the University of Wisconsin in the 1960s. He studied primate behavior under the mentorship of Harry Harlow, in an era of strict behaviorism, when only observable behavior was considered worthy of study. Internal states, like feelings or intentions, were strictly out of bounds.

Dr. Harlow was famous for his studies of maternal deprivation and social isolation in rhesus monkeys, and Gluck continued and expanded this work. He worked with three groups of monkeys: six reared for their first nine months in total isolation; six reared alone in wire cages, but with visual access to other monkeys; and six reared with their mothers and physical access to peers. He carried this model of comparative deprivation to study the influence of nature versus nurture on behavior to the University of New Mexico, where he founded a primate research facility.

From the beginning, Gluck demonstrated concern for his subjects’ welfare, and valued their individual personalities. He sometimes experienced moral distress when his work caused them harm, but managed to rationalize his experiments as ethical because of their potential contribution to human welfare. As time went on, he became uncomfortable with the insensitive and cavalier way some other researchers treated their animals.

Gluck’s journey included several seminal milestones, each of which stimulated an ethical leap forward. The first was his clinical psychology fellowship at the University of Washington in 1977–1978. He discovered that clinicians rarely, if ever, cite animal research in their teaching and practice. He also experienced the personal satisfaction of direct patient care. On returning to New Mexico, he explained, “I was not the same person I had been before I left.” His teaching priorities now included “promoting self reflection and compassion,” and advocating a more ethical approach toward experimental animals.

A second milestone occurred in 1985 when the United States Congress passed the Animal Welfare Act that established IACUCs, which provided the authority to regulate animal care and experimentation. According to Gluck, membership on New Mexico’s IACUC was one of several elements that “combined to shake up my professional life and reinvigorate my ethical reexamination process, which had in recent years been stunted by my own psychological resistance.”

IACUCs generated some forward movement improving living conditions for experimental animals, and requiring researchers to justify the level of pain to which their subjects were exposed. However, their success was diluted by negative feedback from some scientists who chose to interpret the regulations as disruptive interference.

The final milestone occurred in 1994 when Gluck embarked on a fellowship in bioethics at Georgetown University, where he studied with philosopher Tom L. Beauchamp, and physiologist F. Barbara Orlans. Orlans published *In the Name of Science*, a book on the ethics of animal research, which also became the focus of Gluck’s work at Georgetown.

Gluck returned to Albuquerque, and successfully developed a multifaceted Research Ethics Service Project that featured a variety of ethics teaching and consultation functions.

Encouraged by recent cultural change, Gluck closes on an optimistic note:

I remain unreservedly optimistic about the possibility that science, and society as a whole, will come to take seriously the notions that animals are not just property, that they have rights of some kind, and that appropriating animal lives for human use should always elicit ethical analysis that leans toward abstinence as the starting point.

Dr. Coulehan is a member of the Editorial Board of *Pharos*, and one of its Book Review Editors. He is also Emeritus Director of the Center for Medical Humanities, Compassionate Care, and Bioethics at Stony Brook University, in New York. His e-mail address is: john.coulehan@stonybrookmedicine.edu.
More AΩA member books

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Chapter and National News

AΩA Presents 2017 Edward D. Harris Professionalism Award

Drs. Richard and Sylvia Cruess, along with their colleagues at McGill University’s Centre for Medical Education, and McGill’s Faculty of Medicine, have received the Alpha Omega Alpha Honor Medical Society 2017 Edward D. Harris Professionalism Award.

Over the past 20 years, the Cruesses, working with, and within, McGill’s Faculty of Medicine, have stood at the forefront of medicine’s modern day professionalism movement.

Not only have the Cruesses been at the leading edge of medical professionalism, they are distinguished clinicians (Dick is an orthopedic surgeon, and Sylvia is an endocrinologist), and academic leaders (Dick was Chair of Orthopedics and Dean of the Medical School at McGill; and Sylvia is Vice-President (Medical), and Director of Professional Services, Royal Victoria Hospital, Montreal).

If McGill has been their laboratory, the world has been their classroom. They have delivered keynote addresses and led faculty development workshops on four continents across North America, South America, Europe, Africa, the Middle East, Asia, and the Pacific Rim countries. They have lectured and instructed at every Canadian medical school, and nearly half of all United States medical schools.

The Cruesses are global ambassadors for the importance of professionalism in medicine.
Based on British neurologist Oliver Sacks’ memoir *Awakenings*, the movie of the same title tells Sacks’ story fictionalized through American doctor Malcom Sayer (Robin Williams). The movie portrays Sacks’ work with catatonic patients during the summer of 1969.

In the movie, Sayer finds a temporary cure for a group of unresponsive patients confined to a mental hospital for several decades. Many of the patients were inaccurately diagnosed with “atypical schizophrenia,” and “fed and watered” by the institution’s staff until Sayer, a research-trained neurologist, was hired.

Sayer nearly did not get the job. In his interview, he carefully explains the experimental work he has been engaged in for the previous five years, the goal of which was to extract one decagram of myelin from four tons of earth worms. The head of the hospital board cuts him off, noting that his hypothesis was not possible. Sayer proudly announces, “I know that. I proved it!”

However, Sayer stumbles as the interviewers repeatedly ask him about his experience with patients. Despite his very limited history in patient care, and his evident lack of interest in accumulating more, he gets the position. He immediately begins reviewing case histories, and conducting patient examinations.

For Sayer, the transformation from laboratory nerd to caring physician who values relationships and human contact is an integral part of the film, and it is inherently linked to the relationships he builds with his patients, particularly Leonard Lowe (Robert De Niro), and Eleanor Costello (Julie Kavner), the only member of the medical staff who consistently supports his efforts.

Collecting all of the schizophrenia cases into a group, Sayer notes, “You’d think at a certain point all of these atypical somethings would amount to a typical something.” He begins to search for commonality in their physical exams and patient histories. He makes two observations: all of the people in this particular group were infected with encephalitis before developing their current symptoms, and all of them are capable of responding to rapid movement (and some to other external stimuli). He takes these findings to the head of the hospital only to be told that he has incorrectly identified a defensive reflex (batting away an object) as response (catching an object). In one of the most memorable scientific ripostes of film history, Sayer responds to his chief, “I’m sorry. If you were right, I would...”
agree with you,” and continues with his investigation.

Sayer connects with retired neurologist Peter Ingraham (Max von Sydow) who worked extensively on encephalitis lethargica. Ingraham explains that of those who survived the original infection, most were fine for a period of years, and then entered a vicious spiral of deterioration. “They could no longer dress themselves or feed themselves. They could no longer speak, in most cases. Families went mad. People who were normal, were now elsewhere.”

Sayer asks if these patients knew what was happening to them, and Ingraham responds that their cognitive faculties could not have been spared. Sayer asks for evidence to support this conclusion, and Ingraham responds, “The alternative is unthinkable.”

Lowe is one of the youngest afflicted patients. He first attracts Sayer’s attention when he catches a softball thrown at him. Lowe emerges as the focus of Sayer’s efforts to reverse the effects of encephalitis lethargica.

Lowe’s mother (Ruth Nelson) tells the story of how her son went from an intelligent, focused, playful boy to an invalid whose uncontrollable palsy so damaged his handwriting and concentration that he was forced to leave school. Left inside to watch from the window as his friends played, he increasingly found himself locked inside the cage his body became. Decades passed before Sayer encountered Lowe, while his mother faithfully visited, fed him, combed his hair, and mourned the bright boy stuck in the shell of a man.

**The discovery of L-dopa**

After attending a lecture by a specialist on Parkinson’s disease who was getting good experimental results using L-dopa (levodopa), Sayer convinces his department chief to allow him to try the drug on his patients.

L-dopa was discovered to be crucial to brain function during the first half of the 20th century. Isolated in 1913 from plant seedlings, its actions were uncovered in 1938 with the isolation of the enzyme that breaks it down, L-dopa decarboxylase, which produces dopamine from L-dopa. In 1957, dopamine was demonstrated to be present in the brain, and by 1959, it was shown to be enriched in the basal ganglia.1

In 1957 and 1958, studies on untreated and reserpine injected animals demonstrated that it might have effects on reserpine induced parkinsonism. Beginning in 1960, post-mortem dissection of Parkinsonian brains demonstrated a significant lack of dopamine. In 1961, the first clinical trial occurred, and it was highly successful.

**Patient awakenings**

The patients’ “awakenings” are not uncomplicated. Very few have any sense of how much time has passed while they were “away,” and losing three or four decades of their lives is painful. When asked how he feels, one man replies, “Well, my parents are dead, my wife is in an institution. My son has disappeared out west somewhere...I feel old, and I feel swindled, that’s how I feel.”

Others are reluctant to engage with the world they have re-entered. After a summer of refusing to accommodate her new reality, one woman says, “I can’t imagine being older than 22; I’ve no experience at it. I know it’s not 1926. I just need it to be.”

Lowe, however, embraces his new world with remarkable energy and enthusiasm. His decline, despite ever higher doses of the drug, is thus doubly devastating. His mother is the one who finally withdraws permission for the trial to continue after he has become violent, increasingly spastic, and unable to control his movements. Sayer’s affection for Lowe is real, and he wants to see his patient recover—not solely for clinical reasons. However, Mrs. Lowe’s love for her son cannot permit her to continue to see him endure agony with no promise of relief.

Sayer’s clinical trial shed light on the way neurotransmitters work, and the effect they can have on damaged brains. It shed light on what it meant to be human, and to love in the face of grief, with no evidence that it will last.

This film remains important in its genre because of the questions it raises about conflicts between research and treatment; the puzzles posed about when to engage in a clinical trial, and how to explain it to caretakers or patients with limited capacity; and the challenges of determining when to use a potentially helpful new drug that also has the potential to be dangerous. It is a reminder that medicine is a human practice conducted by people who are building knowledge that is often provided through observations and experiments on patients.

**Awakenings** reminds us that emotional intelligence is as valuable and important for physicians as the ability to think, learn, and make decisions. Evidence in this film is not simply the product of physical observation and statistical analysis, but the truth generated from learning with heart.

**Reference**


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