AUA
Association of University Anesthesiologists
Update
Fall 2014

CONTENTS

AUA President's Message: Succeeding In Academic Anesthesiology

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If you can do two things simultaneously and poorly why not do a hundred. This is what we are often called upon to do: take care of patients; run the ORs; prepare patients for surgery; alleviate pre-op anxiety; alleviate patients' post-op pain; care for patients in the ICU and Pain Clinic; do innovative research; teach medical students and residents; be involved in hospital administration; get NIH and other extramural funding; and, by the way, focus on your family. Multi-tasking is popular and wrong. Alternatively a too narrow focus is equally problematic. However, in an academic career you are called upon to do both in order to achieve "success."

So how does one achieve a successful academic career? A successful academic career can only be defined by the individual, achieving the goals they set for themselves. What are the factors that help to lead to a successful "academic" career? There are at least 5, all with the underpinning of hard work: a supportive environment; a willingness to put in sufficient time to acquire the necessary education; finding the right teachers and mentors; having a bit of luck; and, finally, persistence and endurance. These five factors are clearly interdependent. In the following discussion, I will narrow my focus to a career in academic anesthesiology.

"A supportive environment" is one that helps you to develop the area or areas that you have decided to focus on. Obviously, it is important to have a focus that is complementary to the mission of your department or institution. It is also necessary to realize what the breadth of possibilities is within your organization. It is important but perhaps difficult to recognize the possibilities if you are from outside the organization and are negotiating for a position within that organization. Can you grow within that environment, are you surrounded by colleagues who want to help you grow or is it an organization with limited resources confined to an in-group? How can you discover this? Mainly by speaking with people that are there or who have been there. Most importantly, who are the

> *"A period of development goes on continuously and mentoring relationships are often redefined over time. Depending on your areas of interest, most departments/institutions have individuals willing to be accessible and open to your needs as a mentee."*

leaders, what is their track record for supporting members of the department, and are your goals complementary to the goals of the departmental leadership? (Editor Note: for a point counterpoint pair of articles related to this important issue see *"I'm Unhappy Where I Am Should I Send Out My CV?"* By Andrew Kofke and *"So You're Unhappy Where You Are, and You've Sent Me Your CV?"* by Donald Prough in the Fall 2003 issue of *AUA Update* **http://bit.ly/ZnB3BY**)

"Sufficient time to acquire the necessary education." This is an essential piece in developing your career and is a process of differentiation. The residency in anesthesiology and ACGME approved fellowships are quite constrained in terms of their clinical requirements giving little opportunity to develop additional skills in research and teaching. One therefore must be willing to undertake additional training before or beyond

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residency to acquire the skills that will enhance your future development. Often these opportunities might be available outside the standard realm of anesthesiology departments, e.g. at NIH, or through innovative programs such as non-accredited fellowships in various disciplines and within innovative departments of anesthesiology. Unfortunately, these opportunities often mean more years of training with limited remuneration. However, they allow you to get where you want to get.

"Finding the right teachers and mentors" What is the difference between a teacher and a mentor? Sometimes a teacher becomes a mentor. Often that is how a mentoring relationship begins. The obvious beginning is to seek out a teacher who has knowledge and skills you want to acquire. You will soon find out if that person is a mentor as well. A mentor is a person who has knowledge and experience and who is willing to advise you during your period of development. A period of development goes on continuously and mentoring relationships are often redefined over time. Depending on your areas of interest, most departments/institutions have individuals willing to be accessible and open to your needs as a mentee. FAER has an Academy of Mentors both in research and in education, and if you have difficulty finding a mentor within your own institution, it is a resource you might look into.

"Having a bit of luck" The Roman philosopher, Seneca said: "Luck is what happens when preparation meets opportunity." In other words, be aware of what is going on around you so you can take advantage of opportunities that arise.

"Persistence and endurance" These characteristics are essential for a successful academic career. Persistence can be defined as a firm or obstinate continuance in a course of action in spite of difficulty or opposition. Endurance can be defined as the willingness to endure an unpleasant or difficult process or situation without giving way. Both are necessary, whether in the face of an arrogant promotions committee, a rejection by an educational program, a caustic but thorough review by an NIH Study Section, or a difficult editorial response from a journal. Bounce back, respond to the critiques, if necessary take another path. Persistence and endurance are necessary throughout your career; there will be many setbacks, but they are really opportunities to refine your course and respond more effectively.

Finally, in every career path we will each make mistakes. A mentor will help you avoid some mistakes, but others will occur and, as in every undertaking, we learn from those mistakes and ultimately get beyond them.

AUA Call for Member Nominations: Submit Candidates to AUA by January 20!

Association of University Anesthesiologists members are now invited to nominate candidates for membership to the association for 2015

Nominations will be accepted via the online nomination site until **Tuesday, January 20, 2015 at 11:59 pm Pacific.**

Qualifications for Nomination

Candidates for membership should be either of the following:

- An individual who occupies and has occupied a faculty position in anesthesiology in a medical school or its affiliated teaching hospital for at least twenty-four months, following completion of residency training in anesthesiology; or
- An individual whose work as an anesthesiologist, teacher, or investigator has demonstrated success in academic anesthesia or an individual who has shown a continued productive interest in and contribution to academic anesthesia.

Exceptions to the residency qualification shall be made at the discretion of the Executive Council when either of the following two conditions applies:

- The candidate has had a course of graduate training in anesthesia of a high standard; or
- The candidate has shown a continued interest in and contribution to academic anesthesia.

Log in to the **AUA Members-Only section** for additional information on the nomination process or to submit your nomination. The AUA Membership will vote on nominees recommended by the AUA Council at the AUA Annual Business Meeting on Friday, April 24, 2015. Please contact the AUA office at 415.296.6950 or **aua@iars.org** with any questions.

AUA NOMINATION SITE NOW OPEN!

Submission Deadline: Tuesday, January 20, 2015 at 11:59 pm Pacific

Expect Big Changes in Nashville and at Vanderbilt (or "The Future is Not What it Used to Be")

Warren S. Sandberg, MD, PhD
Host Chair, AUA 62nd Annual Meeting
Chair, Department of Anesthesiology
Professor, Department of Anesthesiology, Surgery and Biomedical Informatics
Vanderbilt University,
Nashville, Tennessee

The Vanderbilt Department of Anesthesiology is thrilled to host the 62nd Annual Meeting of the Association of University Anesthesiologists in Nashville, Tennessee, on April 23-25, 2015. We promise to make the most of this three-day conference, hosting quality educational sessions and networking events, as well as opportunities to explore one of the most diverse, vibrant cities in the South. We last hosted the AUA Annual Meeting in 2002, and if you were with us then, you'll hardly recognize Nashville now. Our city has undergone transformative changes over the last decade that have earned Nashville such accolades as the "South's Red-Hot Town" (*Time* magazine), "one of the top five travel destinations to visit in the world in 2013" *(Condé Nast Traveler)*, and "One of the Top 50 Meeting Destinations in the United States"(Cvent). Nashville's healthy economy and enviable quality of life have attracted a large influx of newcomers over the last decade, and these transplants have positively enhanced the city.

> *"Nashville has become one of the South's hottest culinary destinations with some of the top chefs in the nation concocting dishes to delight every palate."*

Nashville is known as "Music City," with the Grand Ole Opry, famed Music Row, and live country music on nearly every corner (even in the airport!), but today, Nashville's definition extends far beyond that label. *New York Magazine* recently reported, "Nashville identifies itself first and foremost as a music town. It's an eating, drinking and hard-partying arts town too." Guilty as charged. Nashville has become one of the South's hottest culinary destinations with some of the top chefs in the nation concocting dishes to delight every palate. Inventive restaurants such as Virago, Sinema, Marché Artisan Foods, Prime 108, Rolf and Daughters, Catbird Seat, Etch, and Patterson House (just to give a scattershot sample) are part of a growing list of exciting restaurants that guarantee you'll dine well while in town.

The hit TV series *Nashville* has produced a new wave of country music fans that flock to honky tonks lining Lower Broadway. Ryman Auditorium, the Mother Church of Country Music, must be on the auditory bucket list, but it's not just country. Jethro Tull in an intimate setting, anyone? Nashville is a full-spectrum music and arts scene, with venues throughout the city featuring classical, blues, rock, and just about any other genre imaginable. Nashville's cultural scene is also booming.

Photo courtesy of Nashville Convention and Visitors Corp.

Located on the banks of the Cumberland River, Nashville has experienced significant change over the last decade, including many additions to the skyline.

The stately Schermerhorn Symphony Center stages world-class orchestral events, while the Tennessee Performing Arts Center is home to outstanding opera, dance and theater performances. The Frist Center for the Visual Arts, housed in a historic Art Deco U.S. Post Office building downtown, hosts spectacular displays of art from around the world. One of the more distinctive buildings in the city's center is the Country Music Hall of Fame® and Museum, the site of the Saturday Night Social Event Reception and Dinner. The building's exterior features windows that mirror piano keys, the northwest corner of the building juts out like the tail fin of a 1950s Cadillac, and when viewed from the air, the building resembles a bass clef. The interior is no less impressive, and the exhibits related to the city's wealth of county music history might well convert those

Photo courtesy of Nashville Convention and Visitors Corp.

The Country Music Hall of Fame® and Museum, site of the AUA Saturday Night Social Event Reception and Dinner, has more than 2 million artifacts in its collection, showcasing one of our nation's foundational music forms.

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who've never once worn a cowboy hat. If you're a rock & roll fan, you need explore the genesis of your music at the CMHF.

Vanderbilt is hosting the meeting at a peak of its growth and accomplishment. Established in 1947, the Vanderbilt Department of Anesthesiology now operates one of the largest clinical programs in the country, providing service for more than 90,000 adult and pediatric anesthetic encounters annually at more than 100 anesthetizing locations. We cover critical care, pain management, and all perioperative anesthesia needs. Vanderbilt University Medical Center is the region's only Level I Trauma Center; we also have an active high-risk obstetrics program, a busy Transplant Center, and the region's largest pediatric referral hospital. This translates into remarkable bedside learning experiences for our trainees.

"Established in 1947, the Vanderbilt Department of Anesthesiology now operates one of the largest clinical programs in the country, providing service for more than 90,000 adult and pediatric anesthetic encounters annually at more than 100 anesthetizing locations."

In June 2013, the American Medical Association selected Vanderbilt to receive a $1 million Accelerating Change in Medical Education grant. School of medicine faculty, including anesthesiologists in leadership roles, are participating in a consortium of top medical schools to identify needed changes in medical education. A new, nationally recognized medical education model, Curriculum 2.0, was fully implemented in 2013. Among the components of Curriculum 2.0 are case-based learning and clinical experiences beginning in year one; information technology blended with curricular and competency goals for real-time progress assessment; flexibility to allow students to complete required competencies more quickly so as to more deeply explore research, clinical and leadership projects; and reduced class size to better achieve these goals.

Photo courtesy of Nashville Convention and Visitors Corp.

Housed in an historic Art Deco Post Office, the Frist Center for the Visual Arts in the heart of Nashville offers world-class art exhibits and family-oriented educational activities.

Vanderbilt's Center for Experiential Learning and Assessment (CELA) offers simulation training that fulfills the American Board of Anesthesiology Maintenance of Certification in Anesthesiology (MOCA) requirement, and classes will be held both before and after the AUA 62nd Annual Meeting.

As you are well aware, huge changes are underway nationally in the training of anesthesiology residents and medical students, and our department is ahead of the curve in transforming our own educational program. As the Next Accreditation System (NAS) requirements from the Accreditation Council for Graduate Medical Education were implemented in July 2014, a team in our department quickly developed an automated case evaluation tool to accurately assess residents' performance as they meet these educational goals. Another feather in our cap is our Center for Experiential Learning and Assessment, an 11,000-square-foot training facility that offers advanced simulation technologies. The center is endorsed by the American Society of Anesthesiologists to deliver certified educational programs, including simulation training that qualifies for American Board of Anesthesiology Maintenance of Certification in Anesthesiology (MOCA) credit. To maximize the value of the AUA meeting experience, MOCA courses are being offered at Vanderbilt, both before and after the AUA Annual Meeting.

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Expect Big Changes in Nashville

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Photo courtesy of Nashville Convention and Visitors Corp.

Ryman Auditorium is a hallowed landmark in downtown Nashville. Opened in 1892, the legendary music venue became the first home of the Grand Ole Opry in 1943. Today, performers from Aretha Franklin to Kid Rock take the stage.

The story of Vanderbilt Anesthesia in the past 15 years can be told in two words: accelerating growth. In academic year 2013-2014, our faculty and research staff published more than 180 peer-reviewed manuscripts – many in high-impact journals – more than doubling our publication count over three years. The department's researchers also organized, led, or presented at more than a dozen national or international meetings in 2013-2014. At the 2014 Annual Meeting of the American Society of Anesthesiologists, department members contributed more than 100 entries. The department also increased National Institutes of Health funding from $2 million in active grants in 2011 to $3.93 million in 2013, rising in funding rank from 19th to eighth. Our total extramural funding is now more than $5.5 million per year, including a new T32 training grant funded on the first round. Our scholarship traces unconventional routes as well. Literature is an area of strength. Anesthesia capacity building in low- and middle-income countries is another, bolstered now by the $3.2 million ImPACT Africa grant to develop durable training programs to develop anesthesia professionals in Kenya and beyond. Google "Vanderbilt Anesthesiology" to get a feel for it all.

As you can tell, we're pretty proud of both our city and our academic undertakings here at Vanderbilt. We can't wait to share both during the AUA 62nd Annual Meeting. If you have any questions, please feel free to contact me. For help in planning your free time in our city, visit **www.visitmusiccity.com**. Also, check out this wonderful snapshot **video (http://nyti.ms/1z3Vcxx)** of Nashville from *The New York Times*. We'll see you soon.

A Perspective of a Program Director and an Educator of the Future of Education in Anesthesiology

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"Change is the law of life. And those who look only to the past or present are certain to miss the future."
– John F. Kennedy

There has been little change in the methods used to educate medical students since Flexner (1910). Charles Prober, MD (Senior Associate Dean, Stanford School of Medicine) emphasized this observation in a recent New England Journal article[1] where he noted that there has been minimal change despite an increasing volume of medical knowledge, evolution of new teaching methods, an increase in health care complexity, and technological support for learners not previously available. One might argue, that with the exception of simulation, there also has been little recent change in anesthesiology graduate medical education. Education in anesthesiology remains time-based and predominantly an apprenticeship model supplemented with didactics that are often presented in a traditional passive classroom format. Is there an opportunity for "disruptive innovation" in anesthesiology education? What knowledge, skills, and attitudes will future graduates need? If educators continue to look to the past and present, will they miss what is needed in the future? This discussion of the future of anesthesiology education focuses on several select areas, often with more questions than "answers" but with hope of encouraging thought, dialogue, and possibly change where necessary.

(1) Graduate Practice Requirements Will Likely Require Changes in Current Curriculum

Residency training curriculums that focus predominantly on rotations and experiences required by accreditation might not be preparing their graduates for certain aspects of current and future practice. Graduates are expected to know more about topics such as practice management and quality and safety, and are valued if they exhibit some level of competency in areas such as perioperative ultrasound (e.g. transesophageal echocardiography) and specialized regional anesthetic techniques. Implementation of the Perioperative Surgical Home model of care will broaden the anesthesiologists scope of practice and will require graduates of anesthesiology training programs to share in the management of surgical patients from decision for surgery to discharge and beyond. Although current graduates have experience in preoperative evaluation, postoperative recovery, and critical care medicine, few are being prepared for the comprehensive role for anesthesiologists envisioned by this model.

(2) Changes in Learner Assessment; High-Stakes Cognitive Examinations, Milestones, and Beyond

The number of assessments, assessment methods, and timing of assessments has changed. The introduction (July 2014) of the new high-stakes ABA Basic Examination following post-graduate year two required programs to consider changes to their curriculum including timing of rotations and introduction of a focused didactic program emphasizing the ABA Basic Exam content outline. The ABA Advanced Examination will be at the conclusion of residency training and the ABA's current Part 2 (oral) examination will become the Applied Examination. Beginning in 2017, the content and format of this Applied Examination will include elements of OSCEs (Objective Structured Clinical Examinations) in addition to the traditional oral examination questions. The addition of the OSCE component challenges training programs to provide formative learning experiences that are similar in content and procedure to the ABA Applied Examination OSCE. With the increasing number of high-stakes assessments, one might ask is "assessment driving curriculum?" and "are we molding educational activities, new educational experiences, and new methodologies of teaching and learning only for the sake of 'the test'?"

The Anesthesiology Milestone Project was published December 2013. This document presented milestones designed for programs to use in semi-annual review of resident performance and reporting to the ACGME beginning July 2014.

With the increasing number of high-stakes assessments, one might ask is "assessment driving curriculum?" and "are we molding educational activities, new educational experiences, and new methodologies of teaching and learning only for the sake of 'the test'?"

According to the Anesthesiology Milestone Project, "Milestones are knowledge, skills, attitudes, and other attributes for each of the ACGME competencies organized in a developmental framework from less to more advanced. They are descriptors and targets for resident performance as the resident moves from entry into residency through graduation." In the initial years of implementation, the Milestone performance data are

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to be used by the Review Committee in aggregate to assess the quality of residency and fellowship training programs. However, one might expect that in the future individual learner milestones data will be used and attainment of some level (i.e. level 4) required at graduation. Most programs will need to make modifications to their evaluation systems to provide the required data for Clinical Competency Committees to complete Milestones assessments for each resident. How can a learner be assessed on an expected milestone if not given an opportunity to demonstrate their performance? Some changes in rotations or experiences (e.g. simulation, simulated patients, OSCE) may be required to provide the opportunity for a resident to demonstrate a Milestone level. Faculty development will be needed to train faculty in assessment of the milestones.

> *"Evidence suggests that the traditional classroom where lectures are delivered in a passive format may not be the most effective or efficient way to deliver didactics."*

The need to address the question of time-based versus competency-based education is also critical[2]. Should learners who demonstrate requisite knowledge, skills, and attitudes prior to the standard 48 months of training be allowed to graduate early? What new educational opportunities might be created for these "fast" learners if they are required to remain for the entire 48 months?

(3) Delivery of Didactics; A movement away from the traditional classroom and the greater use of interactive teaching methods and technology to facilitate education

A MOOC (massive open online course) is an online course aimed at unlimited participation and open access often provided free by major universities. The introduction of MOOCs has increased the interest in online education. Evidence suggests that the traditional classroom where lectures are delivered in a passive format may not be the most effective or efficient way to deliver didactics. It appears lectures may be captured and delivered on-line with similar learning outcomes as passive classroom lectures but that combining on-line learning with classroom learning (blended learning) has advantages.[3] Advantages to on-line learning include "anytime, anywhere learning" and that millennial learners appreciate technology facilitated learning. Prober[1] asked the question "why would anyone waste precious class time on a lecture?" and suggested that one needs to make better use of the fixed amount of educational time by focusing on active learning methods (e.g. "flipped classroom").[4]

In the future, it is likely that anesthesiology educators at various institutions and groups of educators in collaboration will provide high quality online resources used by many learners. Face-to-face classroom time will incorporate more active learning methods (e.g. problem-based learning, case-based learning, "flipped classroom") that encourage deeper levels of learning; beyond recall to application.

(4) Increase in the Number of Anesthesiology Education Specialists and Anesthesiologists with formal educational training

Non-clinical time for academic anesthesiologists is limited and there is increasing pressure to provide clinical services. A desire to integrate newer technology into education, an increasing complexity of required learner assessments (e.g. Milestones), a desire to provide faculty development, and facilitation of educational research in the most economical way has prompted many departments to hire a non-clinician education specialist. Formal educational training for anesthesiologists (e.g. Masters in Education) provides the tools to professionally advance on a career path that might not otherwise be possible. It is likely that the number of both non-clinician educators and anesthesiologists with formal educational training will increase in the future.

(5) Increased Collaboration; More Collaborative Development of Best Practice Educational Materials and Increased Collaborative Educational Research to Provide Evidence for Practice of Teaching/Learning

It makes little educational or economic sense for every training program to "re-invent the wheel" but instead to share best practice educational materials. We envision a collaborative team approach to development and distribution of peer reviewed best practice educational materials (e.g. educational information, videocasts, assessment tools, etc) available to all teachers and learners.

Providing the evidence for the practice of teaching/learning in anesthesiology will also benefit from collaboration between institutions. The SAGE (Study Group for Anesthesiology Graduate Education) educational research group (Director; Matt McEvoy, MD, Vanderbilt Department of Anesthesiology) is an example of such collaboration in educational research. Educational studies will likely be more applicable and generalizable when performed with multiple learners from multiple institutions.

There is an opportunity for "disruptive innovation" in anesthesiology education at this time. Change is inevitable. Together, educators will be able to learn from the past and present and create the future of education in anesthesiology.

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Society of Critical Care Anesthesiologists: First Meeting Held with IARS

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Aryeh Shander, MD, FCCM, FCCP, President of SOCCA; Chief, Department of Anesthesiology, Critical Care Medicine, Pain Management and Hyperbaric Medicine at Englewood Hospital and Medical Center Englewood, New Jersey; Clinical Professor of Anesthesiology, Medicine and Surgery, Icahn School of Medicine at Mount Sinai, New York, New York

The Society of Critical Care Anesthesiologists (SOCCA) continues to be a leader and the largest subspecialty society dedicated to critical care anesthesiologists on all fronts – education, clinical practice, and research. This year the SOCCA Annual Meeting occurred in Montréal, Canada – the first international meeting for SOCCA. This aligns with SOCCA's mission of engaging critical care anesthesiologists from all over the world, and of note the immediate past annual meeting included critical care anesthesiologists from Canada as well as others speaking to a global audience. The SOCCA Annual Meeting took place a day before the International Anesthesia Research Society (IARS) Annual Meeting. As part of IARS providing the management infrastructure for SOCCA, both organizations have formed an alliance for future initiatives.

The SOCCA Annual Meeting program opened with an address by the IARS President of the Board of Trustees welcoming SOCCA to IARS and in particular to this meeting venue. The SOCCA Annual Meeting included sessions focused on right ventricular function, including pulmonary hypertension, mechanical assist devices, celebrating science with updates on important publications, biomedical and health informatics in the intensive care unit, and finished with an interactive case management panel. The American Society of Anesthesiologists (ASA) President-Elect provided an update on ASA activities.

SOCCA members contributed their expertise with a critical-care themed first day of the IARS Annual Meeting. Presentations including educational content by SOCCA members that provided two workshops, one on critical care ultrasound and the other a perioperative ACLS simulation workshop. In addition, SOCCA sponsored a panel dealing with issues of management and ethical issues with a critically ill patient with advanced directives from the ICU to the OR. There was also a well attended discussion about critical illness intraoperative decisions with a problem-based learning session.

The SOCCA resident's guide which contains 45 chapters, was co-edited by Drs. Elizabeth Mahanna, David Shimabukuro, Christine Doyle and Linda Liu, was introduced at the Annual Meeting and serves as a great resource for trainees rotating through critical care. The guide was made available as a member-only benefit in iBooks and PDF formats. Also available for resident and fellow members is additional imaging capability. The PDF version of the guide is available for purchase to nonmembers. Visit **http://bit.ly/1vXoOYR** for more information. SOCCA continues to offer reduced membership fees for resident and fellow trainees and also offers membership to interested medical students.

The SOCCA Annual Meeting continues to offer its annual mentorship program for residents. SOCCA's mentorship program pairs the residents with host faculty member mentors from other institutions. This accomplishes two objectives. First, the anesthesiology residents who attend the SOCCA Annual Meeting have separate educational content tailored to their educational level and development needs and second, also assigns a mentor who can provide another institution's perspective on critical care.

"First, the anesthesiology residents who attend the SOCCA Annual Meeting have separate educational content tailored to their educational level and development needs and second, also assigns a mentor who can provide another institution's perspective on critical care."

This year SOCCA sponsored the first match for critical care using the San Francisco match for fellowship. An anesthesia resident entering the match must have a minimum of 4 months of critical care training during the 48-month continuum of training. The anesthesiology critical care fellowship program entails a minimum of 12 months of training; nine months of training must include responsibility for the care for critically ill patients in the ICU. SOCCA's committee structure supports fellowship training and provides a forum annually for a fellowship directors' breakfast that takes place the morning after the SOCCA Annual Meeting.

Society for Pediatric Anesthesia Update on Pediatric Anesthesia, July 2014

Nancy L. Glass, MD, MBA, FAAP
President, Society for Pediatric Anesthesia, October 2012 – October 2014
Director, Chronic and Palliative Pain Service, Texas Children's Hospital;
Professor, Pediatrics and Anesthesiology, Baylor College of Medicine,
Houston, Texas

Colleagues of the AUA, it is my privilege to provide this update on issues relevant to Pediatric Anesthesia.

Fellowship Training:

There are currently approximately 210 Fellows in Pediatric Anesthesia in 48 accredited programs in the United States. For the last several years, the vast majority of programs and positions have been "in" the NRMP matching program, so that candidates are able to interview at a number of programs before ranking their top choices. The Match has been seen as helpful to candidates, and has increased the number of candidates visiting some of our smaller, high-quality programs.

Boards:

In October 2013, the American Board of Anesthesiology offered a certification examination in Pediatric Anesthesia for the first time. Fourteen hundred seventy five candidates sat for the exam, and 96% passed the exam. The 2014 exam will occur before the ASA Annual Meeting this year, reducing anxiety for many participants! So far, more than 1,000 applicants have been approved for the 2014 exam. Those who finished residency training before July 1, 2012 may apply to take the exam based on experience and current clinical practice; this option expires after the 2015 exam. Please check the ABA website for definitive requirements, application, and deadlines. www.theaba.org

Society Update:

The Society for Pediatric Anesthesia (SPA), of which I have been President from October 2012 to October 2014, is a robust organization comprising 2,568 active members, 43 affiliate members, 228 resident/fellow members, and 141 international members. Also under the umbrella of the SPA is the Congenital Cardiac Anesthesia Society, formed in 2007, now with 1,055 members. Most recently, we welcomed the formation of the Society for Pediatric Pain Management, with 551 members just in its first year; this group's membership will include non-anesthesiologists who provide pain management in a variety of settings. Other active interest groups include the Difficult Airway registry, Craniofacial Reconstruction group, Fetal Anesthesia Interest Group, Solid Organ Transplant group, and the Bioinformatics group.

SPACIES:

One very special group of committed individuals focuses its activities on international service and education (SPACIES). An early project of this group focused on setting up guidelines for equipment and personnel for international mission teams. More recently, this group was instrumental in working with the WFSA to establish a Pediatric Anesthesia Fellowship at the University of Nairobi in East Africa. The Society for Pediatric Anesthesia is proud to be sponsoring one of the three fellows in training this year, a wonderful young woman who will remain in Africa to practice and teach pediatric anesthesia at the conclusion of her fellowship.

Annual Meeting:

The SPA holds its Annual Meeting the Friday before the ASA Meeting begins (we welcome non-members and members alike!) and holds a four-day meeting each Winter/Spring, which includes themed plenary lectures, workshops, PBLDs, original research presentations, and professional development sessions. Both the cardiac and pain groups host optional, one-day educational meetings on the Thursday prior to the main meeting. More than 800 members and guests attend the Winter Meeting.

Quality Initiatives:

The SPA has been extremely active in the quality arena, supporting and sponsoring the Wake-Up Safe initiative, which has now collected comprehensive data on more than 1 million prospective anesthetics in children receiving care at 25 participating institutions. Wake-Up Safe has achieved financial independence now with institutional memberships, and is a member of the Anesthesia AQI. A similar prospective database, the Pediatric Regional Anesthesia Network (PRAN), was developed in 2007 for establishing the safety of regional anesthetics in children; this group has now collected data on more than 80,000 blocks at 18 institutions. Both groups have published several papers with results and best practices. Pediatric anesthesiologist Joe Cravero was also instrumental in the development of the multi-disciplinary Society for Pediatric Sedation and the Pediatric Sedation Research Consortium, studying best practices for ALL those who provide sedation services for children.

And finally, a number of SPA members have been participating in efforts with our surgical colleagues (and the ASA) to match pediatric surgical patients with the optimal perioperative environment.

Pediatric anesthesiologists are busy, committed, and devoted to our youngest and most fragile patients, working to improve care for ALL children requiring surgery. We welcome our colleagues' participation and input.

Applications Sought for FAER Research Grant Funding

Opportunities for Faculty Members and Trainees, Apply by February 15

Denham S. Ward, MD, PhD
President and CEO
Foundation for Anesthesia Education and Research (FAER)
Rochester, Minnesota

The board of directors of the Foundation for Anesthesia Education and Research (FAER) is pleased to announce FAER's 2015 research grant funding opportunities.

FAER provides research grant funding for anesthesiologists and anesthesiology trainees to gain additional training in basic science, clinical and translational, health services and education research. For early-career anesthesiologists interested in pursuing careers as physician-scientists, FAER grants can be an important starting point. These grants aim to help anesthesiologists develop the skills and preliminary data they need to become independent investigators.

2015 Funding Opportunities

The following research grant funding opportunities are available to anesthesiologists and anesthesiology trainees. The application website for the 2015 grant funding cycle is open now through February 15, 2015.

For more information regarding FAER grants and eligibility requirements, visit **FAER.org/research-grants** or email Jody Clikeman, grant program coordinator, at **JodyClikeman@faer.org.**

Mentored Research Training Grants

Research Areas: Basic Science (MRTG-BS), Clinical and Translational (MRTG-CT), Health Services Research (MRTG-HSR)

Purpose: To help physician anesthesiologists develop the skills and preliminary data to become independent investigators

For Whom: Faculty members who completed core anesthesiology residency within the past 10 years

Funding: $175,000

Duration: Two years

Percent Research: 75%

Research Fellowship Grant

Research Areas: Basic Science, Clinical and Translational, Health Services or Education

Purpose: To provide significant training in research techniques and scientific methods

For Whom: Anesthesiology trainee after the CA-1 year

Funding: $75,000

Duration: One year

Percent Research: 80%

Research in Education Grant

Research Areas: Education Research

Purpose: To improve the quality and impact of anesthesiology education research

For Whom: Faculty member of any rank (junior or senior faculty)

Funding: $100,000

Duration: Two years

Percent Research: 40%

Research Grant Application Deadlines

- Online application opens November 1, 2014
- Applications due February 15, 2015
- Award notifications made by May 15, 2015
- Project start date July 1, 2015 or January 1, 2016

Special Note – Second Grant Cycle

The FAER Board of Directors will be opening a second grant funding cycle in 2015, for funding to begin January 1, 2016 or July 1, 2016. The application deadline for this cycle will be August 15. For more information, visit **FAER.org/research-grants**.

Research Grant Eligibility Criteria – Updated For 2015

The FAER Grant Management Committee has made a few changes and clarifications to the eligibility criteria and rules for research grant funding from previous years.

- Applicants may submit only one grant application per award cycle.
- Tuition is not allowed in the budget for any grant.
- The applicant and the primary mentor for the grant must be at the same institution.

To view the complete eligibility requirements and application guide, visit **FAER.org/research-grants**.

Registration for the AUA 62nd Annual Meeting Opens Soon!

Reserve Your Spot in Nashville by March 27 and Save

Registration and housing for the AUA 62nd Annual Meeting, held March 23-25, 2015, in Nashville, Tennessee, will open in mid-November. Be sure to reserve your spot and save with the special early bird registration rate.

At the AUA 62nd Annual Meeting, you will gain valuable learning opportunities, exchange ideas and develop new methods for teaching anesthesia. Hosted by Vanderbilt University Medical Center, the Annual Meeting will offer an in-depth look at Vanderbilt University Medical Center's cutting-edge programs and advancements in the practice of anesthesia. You will also discover original investigations in the clinic and laboratory, presented by peers and colleagues, during three days of Moderated Poster Discussion Sessions.

We hope you will take advantage of the wide variety of stimulating education sessions, developed by the Educational Advisory Board (EAB), Scientific Advisory Board (SAB) and Host Committee, while networking with your peers and colleagues. Below you will find important information regarding the AUA 62nd Annual Meeting.

Photo courtesy of Nashville Convention and Visitors Corp.
The Parthenon in Centennial Park is a full-scale reproduction of the famous Greek temple and adjacent to Vanderbilt campus.

AUA 62nd Annual Meeting Location

Headquarters Hotel
Loews Vanderbilt Hotel
2100 West End Avenue
Nashville, TN 37203

Important Deadlines for Attendees

Abstract Submissions

2015 Abstract Submission Site Now Open
Submission Deadline: Tuesday, January 6, 2015

Registration

Registration Opens Mid-November
Early Registration Deadline: Friday, March 27, 2015
Online Registration Deadline: Thursday, April 16, 2015

Hotel Reservations

Housing Opens Mid-November
Housing Closes: Wednesday, March 25, 2015

Special Events at the AUA 62nd Annual Meeting

Thursday, April 23, 2015
Resident and Junior Faculty Meet and Greet Reception
Loews Vanderbilt Hotel
5:00 pm – 6:00 pm
The Resident and Junior Faculty Meet and Greet Reception gives residents and fellows an opportunity to meet their peers and the AUA Council Members in an informal setting.

Welcome Reception
Loews Vanderbilt Hotel
6:00 pm – 8:00 pm
Join your friends and colleagues for a perfect beginning to the AUA 62nd Annual Meeting. This Thursday evening reception offers an opportunity to relax and is an ideal opportunity to catch up with friends and colleagues.

Friday, April 24, 2015
Explore Downtown Nashville
Attendees are encouraged to explore Downtown Nashville! Busing will be available on a loop at the conclusion of Friday's education sessions for attendees wanting to experience Downtown Nashville's music and food scene.

Saturday, April 25, 2015
Social Event Reception and Dinner
Country Music Hall of Fame® and Museum
Reception: 6:00 pm – 7:00 pm
Dinner: 7:00 pm – 10:00 pm
Unwind with peers and colleagues and take in some music history at this year's Social Event Reception and Dinner at the Country Music Hall of Fame® and Museum on Saturday, March 25, from 6:00 to 10:00 pm. Attendees will be given access to the museum during the reception. To learn more about the Social Event Reception and Dinner, visit **http://auahq.org/2015-social-event-reception-and-dinner/**. Don't miss this lively event!

Program Updates and More Information

Visit the AUA Annual Meeting website at **http://auahq.org/aua-annual-meeting/** for program updates and what to do and see in Nashville.

Register for the AUA 62nd Annual Meeting in Nashville, Tennessee and play a part in advancing the art and science of anesthesiology, surrounded by the vibrant energy of Music City!

See You in Nashville!

Domino Presents 2014 Rovenstine Lecture on Changes in Healthcare…Not Business as Usual

Dealing with Disruptive Innovation

W. Andrew Kofke MD, MBA, FCCM
Professor, Anesthesiology, Critical Care Medicine, Neurosurgery, Director, Neuroanesthesia, Co-Director, Hospital of the University of Pennsylvania Neurocritical Care Program; University of Pennsylvania; AUA Update Editor
Philadelphia, Pennsylvania

AUA Member Karen B. Domino, MD, MPH, presented the 2014 Emery A. Rovenstine Memorial Lecture on "Health Care at the Crossroads: The Imperative for Change" during the American Society of Anesthesiology (ASA) Annual Meeting in New Orleans. The presentation was based largely on her time in Washington, DC in 2012 and 2013 as a health policy fellow of the Robert Wood Johnson Foundation where she worked with the powerful House Ways and Means Committee. Dr. Domino, who is Professor of Anesthesiology and Pain Medicine, and Vice Chair for Clinical Research in the Department of Anesthesiology and Pain Medicine at the University of Washington School of Medicine, Seattle, emphasized that we are no longer in an era of "Business as Usual," indicating that we are in a time of disruptive innovation.

> *"A primary challenge for health care leaders is following ethical principles in introducing innovation and also supporting and developing an institutional culture that values innovation, change, and creativity while at the same time promoting cost effective clinical practices."*

She gave examples of anesthesia groups losing their contracts and individual livelihoods due to what might be categorized as administrative disruptive innovators. These administrative disruptive innovators offer services and leadership that is in the "not business as usual" category and appeals to forward-thinking hospital leaders. Disruptive innovation typically involves technological advances but our times indicate that innovative and potentially disruptive care delivery models are also upon us. I thus take this opportunity to review concepts of disruptive innovation which I think will shed more light on Dr. Domino's warning to all anesthesiologists, indeed, to all physicians in 2014.

Turning an idea into an innovation (i.e. gaining acceptance such that it is "diffused" and translated to action) is difficult. This was cogently described in Kuhn's Structure of Scientific Revolutions,[15] wherein he described the importance of convincing your peers of the importance of a breakthrough. Empirical research has supported this with observations that 66-90% of attempts to implement change in an organization fail, generally because leaders do not adequately consider how the change impacts the staff, who, after all, are the most responsible for translating ideas into practice.[7] This supports the notion that the phenomenon of technological development and diffusion is not well understood such that there is no well accepted framework upon which to base any cogent policies for development of new health-related innovations and technologies.[2] These issues and their importance underlie the commissioning of a scientific treatise on the subject commissioned in the UK by the National Health Service.[12,13] A brief overview of what is known about innovation follows.

Implementation science[3] is the moniker applied to techniques related to diffusion of innovation in healthcare. A primary challenge for health care leaders is following ethical principles in introducing innovation and also supporting and developing an institutional culture that values innovation, change, and creativity while at the same time promoting cost effective clinical practices. The institution that promotes such an ethos of innovation can "stretch the limits of individual and collective knowledge, skill, and ability to meet complex consumer needs."[10]

Diffusion of technology and innovation has been described from three different perspective:[2]

1. Simply following and analyzing the route that an innovation takes in progressing from idea to individuals implementing it. This forms the basis for classical theories of innovation.
2. Evaluation of organizational features which impact on diffusion of innovation. Many of these are delineated below but in a general sense can be related to centralized versus decentralized decision making, how responsibility is distributed, level of education of employees, and economic factors underlying a given organization
3. Evaluation of the between-individual power struggles that may affect diffusion of innovation, basically, a political perspective

Management practices have a significant impact on organizational creativity. Simply introducing a new idea does not warrant that it will be translated to successful innovation status.[9] It largely depends on the acceptance of those who will be evaluating and then implementing the idea.

As such, Rogers[9] characterized groups and their leaders according to when they adopt a new idea:

1 . *Innovators*
2. *Early adopters*
3. *Early majority*
4. *Late majority*
5. *Laggards*

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Domino Presents 2014 Rovenstine Lecture

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Photo Courtesy of American Society of Anesthesiologists

Thus is spawned the notion of diffusion of innovation as the process by which an innovation is communicated and implemented over time among the disparate members of a social system.[9] In the context of national healthcare policies these notions might be extrapolated to a societal level also such that a nation's entire healthcare system becomes a macro-organization which diffuses process innovations across healthcare facilities.

Rogers[9] in working out why there would be inter-individual differences in adoption of innovation discerned characteristics of innovations, from the perspective of involved individuals (or hospitals) which may account for varying rates of adoption of innovation:

1. *Relative advantage*
2. *Compatibility*
3. *Complexity*
4. *Trialability*
5. *Observability*

Given these tendencies for individuals to react differently to an innovative idea it becomes incumbent on institutional and national leaders to develop a learning organization culture as espoused by Senge.[11,17] A learning organization facilitates the learning of its members and continuously transforms itself. It has five characteristics: systems thinking, personal mastery, mental models, shared vision and team learning.

Burns and Stalker in 1961 observed the impact of different institutional cultures on incorporating innovation. Highly structured mechanistic organizations did well in a stable environment whereas organizations with greater reliance on individual knowledge (and presumably creativity) functioned better in increasingly unstable environments.[11] Others have made congruent observations delineating specific factors that determine an organization's reaction to change. These include openness to change, level of staff support for the change, ease of past change implementation, flexibility and adaptability, optimism and the organization capacity to cope over time.[7]

Similar to individuals, organizations have been observed to adopt innovations at varying speeds and similarly might be characterized as ranging from early adopters to laggards. Potential reasons for this were discussed by Cockerill etal.[6] Much of the behavior is rooted in the extent to which an institution engages in logical information gathering and assessment of new innovations, a process which itself may create an anti-innovative non-risk taking laggard organizational personality. This contrasts to the illogical approach based in uncertainty such that adoption decisions become more heavily based on decisions by other institutions to become adopters thus leading to the bandwagon and fad phenomena. The driving pressures that underlie such behavior include desire to gain prestige and attract patients, improve appearances, and emulate larger prestigious rivals. Just look at the billboard advertising for hospitals in any major American city to see examples of the bandwagon phenomenon in healthcare.

Photo Courtesy of American Society of Anesthesiologists

True innovation, however, does not always originate in the board room, and can often mean relinquishing control or resorting to unfamiliar (or previously nonexistent) channels of communication. This is especially true for larger businesses with long traditions of doing things a certain way — which might in some cases accurately describe most U.S. integrated health care systems, particularly given their ongoing struggles to contain costs and optimize clinical care delivery[14] using the best evidence. This has led to support for the notion of democratization of innovation in large organizations[19] and underlies work by Wharton's Terwiesch and Ulrich[18] in using software (the Darwinator)[8] to facilitate innovation tournaments open to everyone in a large hospital system. The notable drawback of such tournaments is that most enthusiastically contributed ideas for innovation are summarily rejected, discouraging front-line innovators, and they rely entirely on the creativity and open minds of the judges.

One way of ensuring that an organization, including some within academic medicine, can adapt quickly is to designate a single person or group to help foment and manage transformative ideas. Although circumstances and titles might differ, the essence of the role, generally known as the chief innovation or chief transformation officer, is to seek out fresh thinking at all levels of operation, and do so with the backing and authority of organizational leadership.[14] This itself may be a fad and time will inform us as to whether such an approach will have an enduring effect on health systems' success with diffusion of innovation to improve patient care and clinical processes in a cost effective manner. Nonetheless, an innovation officer, appointed for symbolic and bandwagon

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reasons who is surrounded by innovation laggards is destined to not be effective. An innovation officer must be in a learning organization.

Dealing with Disruptive Innovation: The Innovator's Dilemma

Innovation in medicine is quite dynamic with a rapid innovation cycle such that the typical medical device is replaced by an improved version every 18-24 months.[1] This can lead at times however to the improvements outstripping the needs of consumers, a situation that contributes to conditions conducive to disruptive innovations.

Innovation is intrinsically unpredictable both in terms of the quality of the idea and the ability to gain acceptance by those who will be using it (diffusion). This creates a vexing problem for institutional leaders who are comfortably ensconced in "cash cow" stable technologies and practice patterns which have been and seem to be continuing to successfully create satisfied, paying customers with excellent revenue. This then constitutes the **innovator's dilemma.**[5] It arises from the difficulty a successful, well-run organization has in recognizing and developing new potentially disruptive technologies while continuing to support and incrementally improve currently successful technologies.

Given that a disruptive innovation is one which has the capability to replace and displace currently successful technologies and practices, but also that it is often difficult to predict such success in a nascent idea, the organizational leader has a dilemma.

There are many examples of well-run companies being victimized by this dilemma:[5]

- Sears losing its lead in credit cards
- IBM missing out on minicomputers
- Xerox not developing tabletop copiers
- Kodak going bankrupt due to digital photography, notwithstanding the fact that they held patents on the technology

In each of these cases, and others, the organizational leaders, comfortable in the financial success of past innovations that became cash cows, failed to accommodate the new innovations that eventually displaced their cash cows – arguably this is what is happening to "business as usual" anesthesia practices. The essence of the innovator's dilemma is that the logical competent decisions of management that are critical to the short-term success of their companies (or group anesthesia practice) paradoxically are also reasons why long-term they lose their positions of leadership.

> *"Innovation is intrinsically unpredictable both in terms of the quality of the idea and the ability to gain acceptance by those who will be using it (diffusion)."*

Disruptive innovations become disruptive for several reasons outlined by Christensen.[5] To begin with, organizations depend on satisfied customers for ongoing profit and infusion of resources. A new technology, however, initially will appeal to only a small market (early adopters) and such markets cannot contribute meaningfully to the margin of a large company or hospital system. Moreover, some new technologies have no history from which market data can be derived, from which standard of practice analysis can be done to make a return on investment decision. It's a gamble. Finally, an organization, in deciding to invest in improvement of existing successful technologies may, in fact, improve its technology right out of and above the existing cash cow market, even as ongoing improvements of the newer ignored technology improves to then meet this market's needs. Thus an organization's strengths in its conservative well-reasoned decision making regarding investment in new innovations can actually become its major weakness when dealing with new potentially disruptive innovations.[5] These analyses which Christensen makes for ordinary for profit companies presumably also

Table 1

Three sets of questions to determine if an idea has disruptive potential[4]

1. ***Can the idea become a new market disruption?***
   a. Is there a large population of people who have not been able to do this thing themselves and have gone without or paid a lot for it? (e.g. need for urgent care)
   b. To use the product or service do customers need to go to an inconvenient location?
2. ***Is there potential for low end disruption?***
   a. Are there customers at the low end of the market who would be happy to purchase a product with less, but good enough performance if they could get a lower price? (e.g., independent CRNAs)
   b. Can we create a business model that enables us to earn attractive profits at the discount prices needed to win the business of the low end customers?
3. ***Litmus test question***
   a. Is the innovation disruptive to all of the significant incumbent firms in the industry? (e.g. servo-controlled anesthesia robot systems)
   b. If it appears to be sustaining to one or more significant players in the industry then the entrant is unlikely to win.

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apply to health care organizations and physician practices. It is tempting to speculate that much of what is occurring in anesthesia practice; in development of highly expensive technology, adherence to proven high quality methods, and extremely low mortality; might be aptly described by the above noted dynamic.

It thus becomes important for an organization's or group practice's leadership to have some means to identify the disruptive potential of a new idea and be able to manage it. The algorithm which underlies such decision-making is depicted in Table 1.

Ambidextrous Organization and the Learning Organization

Similar to the Roman god Janus, who had eyes facing both forward and backward, it seems that institutional leaders have to be capable to attend to past and ongoing successful innovations, even as they are using an open mind in preparing for the innovations that will define the future of their industry.[16] Companies and hospitals that successfully do this have found ways to continue to exploit the present while simultaneously supporting developments oriented to the future. Notably, they create administrative structures which support both goals.[16] Nonetheless, a successful organization has to still have mechanisms in place to support non-disruptive innovations and improvements.

Thus, different administrative structures are required to support the three types of innovation:[16]

1. **Incremental innovation.** Continued improvement of ongoing processes … akin to QI in a hospital
2. **Architectural innovation.** Applying a new advance to fundamentally change or improve an already existing component of the business
3. **Discontinuous innovation.** Disruptive innovation such as digital photography replacing traditional photography.

Reilly[16] suggests that the optimal approach to dealing with potentially disruptive technologies is development of a so-called ambidextrous organization. Such an arrangement sets up the organization to "encompass two profoundly different types of businesses—those focused on exploiting existing capabilities for profit and those focused on exploring new opportunities for growth. The two approaches require very different strategies, structures, processes, and cultures".[16] This would suggest that the entities where academic anesthesiologists work: universities, hospitals, physician practices; should continue things that work while continuously assessing and embracing the innovations that will transform our practices; that is our departments and hospitals must become ambidextrous.

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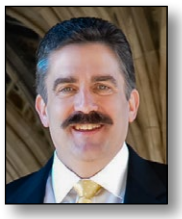

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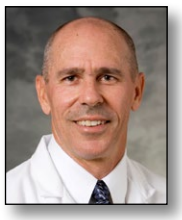

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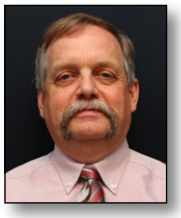

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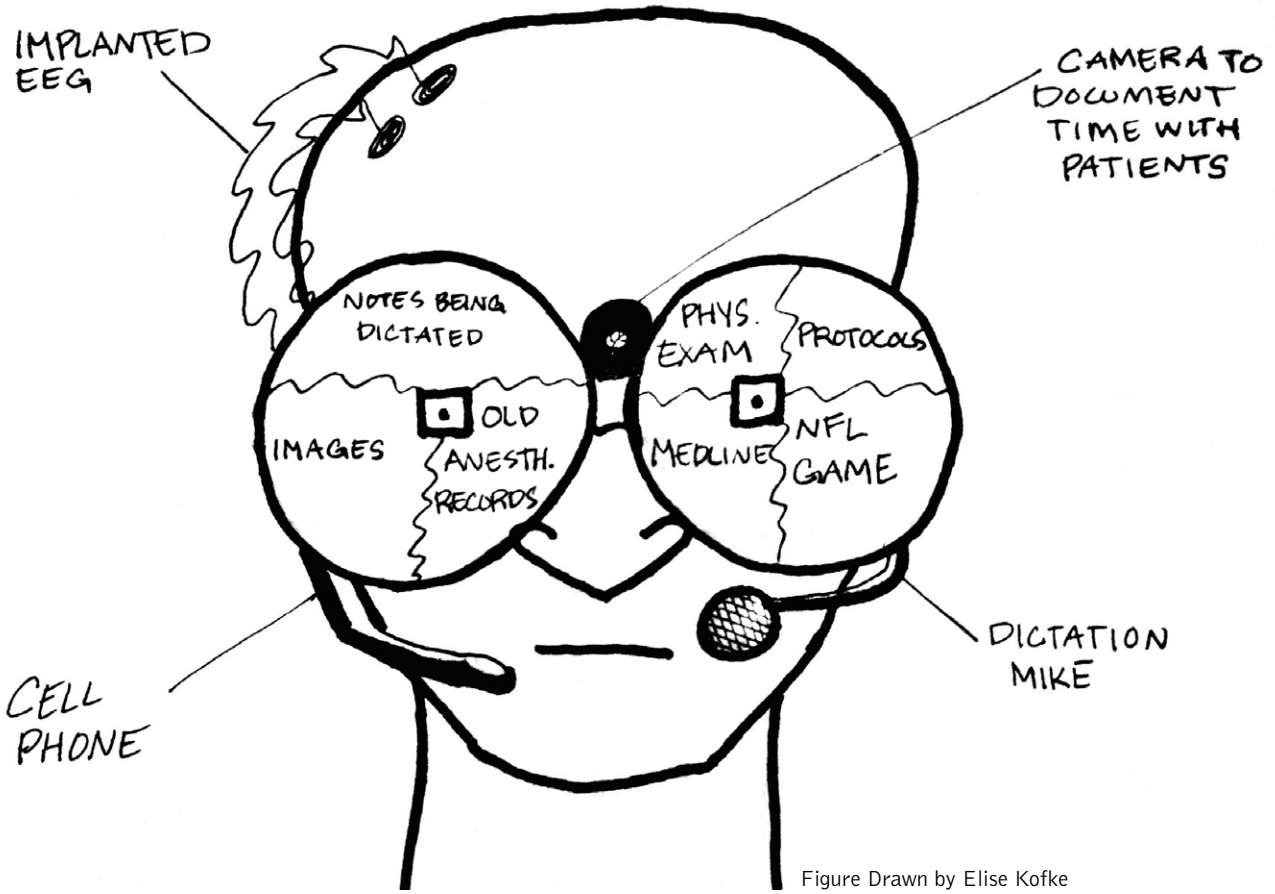

Figure Drawn by Elise Kofke

Fully equipped with computer glasses. Note the following essential elements of the gear:

1. Microphones for cell phone and dictation
2. View of dictated notes and documentation in real time
3. Area to view important medical images
4. Camera to record all activities of the day, prove time spent with patients and procedures done with software which automatically IDs the patient and records video in EMR
5. Area to view old records and videos
6. Automatic physical exam app. Observes and records all aspects of physical exam, e.g.: pupils, temperature, respiratory and cardiac abnormalities, BMI and so on, all automatically
7. Protocol repository for how to handle every possible medical and personal problem
8. All of the world's medical knowledge
9. Videos of recent sports games
10. EEG indicates when doctor thinking about work. Implanted version allows identification of specific patient based on EEG characteristics. Bill for thinking about each patient.
11. Tiny see holes to allow visualization of the real world

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