common SENSE

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THE NEWSLETTER OF THE AMERICAN ACADEMY OF EMERGENCY MEDICINE

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PRESIDENT'S MESSAGE

New Wrinkles

William T. Durkin, Jr., MD MBA FAAEM

There you are in your independent group. Doing everything right; well run; satisfaction scores high; all board certified docs; great relations with the administration, nursing, and the medical staff. Your group is well established; doesn't take a hospital subsidy.

The hospital has a hospitalist program, which has actually made your lives much easier when it comes to admitting patients. They are a good group and work well with your docs. They, however, do require a subsidy, a large one at that. Seems it costs the hospital seven figures to run the hospitalist program. Like most, your hospital is doing all that it can to stay in the black in these uncertain times.

One day, your CEO gets a call from a CMG. Usually he doesn't talk to them, as he is more than happy with your group and couldn't think of running the hospital without the ER group. Today, however, the call is a bit different. The CMG can add the seven figures that the hospital spends on the hospitalist service back to its bottom line. That's right, they will assume the hospitalist service at no cost to the hospital. In exchange, they also want the ED services contract. The two are bundled.

After much thought, the proposal goes before the board. The CMG promises that they will keep the same ER docs on, if they wish. The directors see that this will increase the net profit of the hospital, so they vote to accept the CMG's proposal. You and your group receive your 90-day notice. The CMG contacts you and sends you a contract replete with all the usual CMG clauses about which we have warned you. You can stay or move on to another hospital or community to start all over again. Through no fault of your own, you have been replaced.

This scenario is occurring throughout the country. You will note that many of the CMGs now also offer hospitalist services. By and large, that is not profitable, but it does provide access to an ED contract that may be **very** profitable. Of course, guess where the needed subsidy to pay the hospitalist comes from? You got it: the ED revenues. Fee splitting, anyone?

Another scenario comes to us from the West Coast. Your group is well established and has a similar profile to the one in our first example. Your contract comes up for renewal. The hospital wants to make a few changes this time. First, it wants you to increase your malpractice coverage limits from $1 million /$2 million to $2 million /$4 million. This will result in a substantial increase in your operating costs, thus a decrease in your income. Of course, the unintended consequence is that now you may very likely become a much more attractive target for the plaintiff attorneys. As if that is not enough, the hospital also includes an indemnity clause in your contract. This states that your group will pay any and all expenses involved if the hospital should be named as a co-defendant in a malpractice suit against one of the members of your group. Here you are on the hook for their legal fees as well as any settlement or judgment reached against them. Your liability is practically unlimited. You are not likely to find insurance for this. One group estimates that it would have to post a bond of $1 million in order to sign that contract. Obviously, no independent group could sign such a contract. On the other hand, a CMG could.

So, you ask, what can the Academy do about these new wrinkles? One action is to make you aware that these things are happening. We have begun reaching out to hospital administrators and educating them about the advantages of having a local, independent group staff their emergency departments. Depending upon how the practices are set up, a CMG using the ED physician revenues to subsidize the hospitalist contract could be fee splitting, which goes against Medicare laws.

In a situation like the second scenario, we will support groups that find themselves in this predicament. Enlisting the aid of state medical societies is something we have done. The Academy has a position statement against this type of clause. We are also looking into working with other

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FROM THE
Editor's Desk

Changes Ahead

Andy Walker, MD FAAEM
AAEM Board of Directors

Dr. David Vega has handed me the reins, and I am now the editor of *Common Sense*. The thought of trying to fill David's shoes is daunting, but I will do my best to make him, and you, proud. To that end, AAEM's leadership has agreed to fund upgrades in format, which you will see starting with the next edition. There will also be changes in content, some of which will be aimed at making *Common Sense* more relevant to clinicians practicing outside the academic world. The Academy is so powerfully involved in education at the residency, CME, and international levels that it is easy to overlook all it does for nonacademic emergency physicians. I want our newsletter to help change that.

Three new features are already planned. One will be a web-based "Letters to the Editor" section, and this will be coupled with upgrades to the AAEM website that will make *Common Sense* easier to view on the Web and via social media apps. The others are regular columns called "Law and Emergency Medicine" and "The Business of Emergency Medicine." All three will require your input to be successful. If something is missing from *Common Sense* that you would like to see, tell me. If something is appearing regularly that you consider a waste of space, tell me. If the newsletter contains something that makes you mad, go to the AAEM website and post a letter to the editor – we all enjoy a good argument and sometimes learn from the back and forth. If it isn't a forum for debate, the "Letters to the Editor" feature will be a bore, so I need your opinions.

If you have experience in managing an emergency medicine group, coding and billing, fighting off a hostile takeover of your contract, founding a group and building it from nothing, or other business topics – share your expertise, especially if it was painful to acquire. You don't have to be a professor of emergency medicine to submit an article to *Common Sense*. Submissions are judged on content, not origin. The private practice of emergency medicine by independent, equitable, democratic groups has never been widespread, and the advent of ACOs is a new and serious

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AAEM Mission Statement

The American Academy of Emergency Medicine (AAEM) is *the* specialty society of emergency medicine. AAEM is a democratic organization committed to the following principles:

1. Every individual should have unencumbered access to quality emergency care provided by a specialist in emergency medicine.
2. The practice of emergency medicine is best conducted by a specialist in emergency medicine.
3. A specialist in emergency medicine is a physician who has achieved, through personal dedication and sacrifice, certification by either the American Board of Emergency Medicine (ABEM) or the American Osteopathic Board of Emergency Medicine (AOBEM).
4. The personal and professional welfare of the individual specialist in emergency medicine is a primary concern to the AAEM.
5. The Academy supports fair and equitable practice environments necessary to allow the specialist in emergency medicine to deliver the highest quality of patient care. Such an environment includes provisions for due process and the absence of restrictive covenants.
6. The Academy supports residency programs and graduate medical education, which are essential to the continued enrichment of emergency medicine, and to ensure a high quallity of care for the patients.
7. The Academy is committed to providing affordable high quality continuing medical education in emergency medicine for its members.
8. The Academy supports the establishment and recognition of emergency medicine internationally as an independent specialty and is committed to its role in the advancement of emergency medicine worldwide.

Membership Information

Fellow and Full Voting Member: $365 (Must be ABEM or AOBEM certified in EM or Pediatric EM)
Associate Member: $250 (Limited to graduates of an ACGME or AOA approved Emergency Medicine Program)
Fellows-in-Training Member: $75 (Must be graduates of an ACGME or AOA approved EM Program and be enrolled in a fellowship)
Emeritus Member: $250 (Must be 65 years old and a full voting member in good standing for 3 years)
Affiliate Member: $365 (Non-voting status; must have been, but are no longer ABEM or AOBEM certified in EM)
International Member: $150 (Non-voting status)
Resident Member: $50 (voting in AAEM/RSA elections only)
Transitional Member: $50 (voting in AAEM/RSA elections only)
Student Member: $20 or $50 (voting in AAEM/RSA elections only)
*Fellows-in-Training membership includes Young Physicians Section (YPS) membership.

Pay dues online at www.aaem.org or send check or money order to: AAEM, 555 East Wells Street, Suite 1100, Milwaukee, WI 53202

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AAEM is a non-profit, professional organization. Our mailing list is private.

Permanent Doc Pay Fix Will Come, But When?

Kathleen Ream, Director of Government Affairs

On February 2, 2012, President Obama signed payroll tax legislation that included a provision canceling the Medicare physician pay cut of 27 percent through the end of the year and replacing it with a pay freeze. A growing consensus exists in Washington that a permanent fix will feature several years of legislative payment updates, followed by a transition to a new payment system; however, it remains unclear when Congress will approve a permanent fix.

If Congress wants to avert a 32 percent Medicare reimbursement cut for physicians that would take effect January 1, 2013, it will have to address the issue during a lame-duck session after the upcoming presidential and congressional elections. Because the session could be politically contentious and include several other important issues to address, it is unlikely Congress would tackle a permanent fix then. More likely to occur after the presidential election is that Congress would again pass a short-term fix canceling the January 1 pay cut. That would allow a permanent fix to be included in a larger legislative package of tax and entitlement reform that could be considered by a new Congress.

According to some policy experts, there is growing certainty that a permanent fix would entail Congress passing yearly payment updates until the Centers for Medicare and Medicaid Services can test and implement an alternative payment system. Legislation eventually passed by Congress most likely will include a phase-in period. For example, in May 2011, the American Medical Association told the House Energy and Commerce Health Subcommittee that the current system should be repealed, followed by a five-year period of legislative updates and then "a transition to an array of new payment models designed to enhance care coordination, quality, appropriateness and costs."

During the past year, Congress had two opportunities to advance a permanent fix. In the first instance, a fix was considered by the Joint Select Committee on Deficit Reduction in 2011, but the committee failed to produce an overall budget proposal, and a permanent fix died along with it. The second chance came during negotiations earlier this year of a House/Senate conference committee formed to extend policy on the "doc fix" as well as a payroll tax holiday and unemployment insurance. Conferees could not agree on how to pay for a permanent fix, however, instead opting for the 10-month fix that the President signed into law.

Rather than wait until 2013, some lawmakers want to get started trying to fix the system this year, although most observers believe a permanent fix has little chance of becoming law in 2012 because sweeping new policies are not often considered in an election year. Later this year, House Republicans are expected to consider legislation to reform the system permanently by phasing out the current Medicare fee-for-service system. Insiders say the legislation would aim to replace the "one-size-fits-all" approach of the current payment system with a new system that is "not quite as top-down as what you've seen." The House Ways and Means and Energy and Commerce committees are working together on the legislation.

In October 2011, the Medicare Payment Advisory Commission recommended Congress scrap the current Medicare reimbursement system and pay for the repeal through cuts in pay to specialists and other providers. The 10-year recommendation would freeze payment levels for primary care doctors over the decade but would cut other Part B providers by 5.9 percent for the first three years, followed by a freeze.

Representative Allyson Schwartz (D-PA), who has been working with Representative Phil Roe (R-TN) on a physician payment reform plan, has drafted a proposal in which the sustainable growth rate formula would be repealed, followed by a six-year transition in which physician payments are modified until a new system is implemented. Schwartz recently told reporters that lawmakers will keep trying to repeal the current system, and action during the lame-duck session is possible, although an already-full agenda may prevent consideration of such a plan.

Paying for a fix will be problematic. There is agreement between Democrats and some Republicans to use unspent funds from the wars in Iraq and Afghanistan to help pay for a fix, but House GOP leadership has rejected the idea. Without the war funds, finding a way to pay for a permanent fix will be daunting. Funding also could be found if the doc fix is included in a larger entitlement reform package that includes such provisions such as raising Medicare's eligibility age from 65 to 67.

While some Hill observers say it will take a huge act of political will for Congress to pass a permanent fix, they predict it will happen eventually, since the current system is unsustainable and is forcing physicians to stop seeing Medicare patients.

State Malpractice Statute Pre-empted When Alleging EMTALA Claim

Finding on March 2, 2012, that a plaintiff's claim seeking damages for a violation of EMTALA trumps the plaintiff's failure to comply with a state's medical malpractice pre-suit filing requirements, the U.S. District Court for the Southern District of West Virginia denied a hospital summary judgment on the patient's EMTALA screening claim (Cox v. Cabell Huntington Hospital Inc., S.D. W. Va., No. 3:11-cv-843, 3/2/12).

The Facts

On November 6, 2009, Carl B. Cox presented to the emergency department at Cabell Huntington Hospital (CHH) with a severe arm fracture and a pain level of 10 on a 1 to 10 scale. Cox alleged he was discharged from CHH without being adequately screened or stabilized, as is required under EMTALA.

No further information is contained in the decision indicating whether Cox suffered a bad outcome after the ED experience in question. In response to Cox's lawsuit, the hospital moved to dismiss, arguing, "Plaintiff's claim is in reality a claim based on negligent medical care, and, therefore, Plaintiff must comply with the pre-suit requirements of the West Virginia Medical Professional Liability Act (MPLA)." Under the MPLA, malpractice suits in the state must contain a screening certificate of merit by a qualified expert under oath stating that the lawsuit has a reasonable basis. Cox stated that he "did not plead, and does not intend to pursue, a state malpractice claim; therefore, the MPLA requirements do not apply" to his private action for violation of the federal EMTALA statute.

The Ruling

The federal court began its decision affirming that EMTALA is not a federal malpractice act. Rather, its intent is to address "patient dumping" by requiring hospital EDs a limited duty to "screen all patients as any paying patient would be screened and to stabilize any emergency condition discovered." EMTALA also provides a private

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cause of action for any person suffering personal harm as a direct result of a participating hospital's violation of a requirement. While a person is entitled to file a lawsuit against a hospital, the Court noted that under the principles of federalism, "state conditions simply cannot be recognized as conditions precedent to the vindication of a federally created right," in the "absence of a federal statute's express or implied acceptance of the state based condition for federal liability."

There are two sections of EMTALA that incorporate state law. The Court found, however, that neither section accepts CHH's proposed "state based condition for federal liability." The first section incorporates state law only as limitations on damages and does not incorporate procedural requirements for pursuing an EMTALA action. Thus, the Court determined that the section "does not, therefore, incorporate the MPLA screening certificate requirement."

In the second section, EMTALA provides that "only state and local laws that directly conflict with the requirements of EMTALA are preempted." CHH contended, "MPLA does not directly conflict with EMTALA, and, therefore, Plaintiff must comply with its [certificate of merit] requirements . . . Along with obtaining the certificate, West Virginia medical malpractice plaintiffs must, for example, file a notice of claim with all defendant providers, and obey specific time limits at various stages of bringing an action."

The Court disagreed with Defendant, holding instead that the West Virginia medical malpractice requirements "directly conflict with the EMTALA private right of action and are therefore preempted." As a controlling authority, the federal court drew on the Fourth Circuit's decision in "Power v. Arlington Hosp. Ass'n, 42 F.3d at 856, which . . . reasoned that the direct conflict arises because the timing requirements in state pre-suit procedures, and the time consumed in complying with those procedures, has an adverse effect on EMTALA's statute of limitations." Likewise, the federal court pointed out that West Virginia's MPLA contains specific waiting periods, such as "[a]t least thirty days prior to the filing of any medical professional liability action against a health care provider, the claimant shall serve . . . a notice of claim on each health care provider the claimant will join in litigation." But, even if it were to consider "only the screening certificate requirement, and not the wait period requirement (as Defendant appears to urge), the time involved in obtaining an expert and executing a certificate of merit under oath would also conflict with EMTALA through an adverse effect on EMTALA's statute of limitations . . . Thus, the MPLA pre-suit requirements at issue in this case are preempted because they directly conflict with EMTALA . . . [and] with Plaintiff's pursuit of his EMTALA action."

Another rationale for determining that the presuit procedural requirements are pre-empted was the Court's finding that the MPLA also "directly conflicts with Plaintiff's EMTALA disparate screening claim by imposing additional substantive conditions on his recovery. A physician providing a MPLA certificate of merit has to consider whether, and how, a plaintiff's medical care was below the applicable standard of care." The requirements for proving an EMTALA violation are different from those for proving a medical malpractice claim. The EMTALA screening cause of action is "not whether the screening met the applicable standard of care, but whether it was the same as that provided to other patients in the same facility." Cox's lawsuit is for a violation of EMTALA, and since the federal law does not require that a plaintiff file a "certificate of merit," the Court ruled that the "certificate of merit" requirements in the state malpractice statute were preempted when alleging an EMTALA violation. The Court denied the hospital its motion to dismiss.

The court's decision can be accessed at http://ia600809.us.archive.org/6/items/gov.uscourts.wvsd.76194/gov.uscourts.wvsd.76194.14.0.pdf

EMTALA case synopsis prepared by Terri L. Nally, Principal, KAR Associates, Inc.

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physician groups and specialty societies to advocate passage of laws forbidding such clauses. The AMA has been against this for some time and has a ready-made packet containing a suggested template for a bill outlawing such practices. Of course, the unintended consequence of the indemnity clause is that the hospital may get its "dirty laundry" aired in public. Once groups are placed in this position, it is easy to see how they might point the finger at the hospital, bringing up the fact that they were understaffed, failed to enact QI measures, etc. These clauses are negotiable, and we encourage any groups that find themselves up against them to negotiate those clauses out of their contracts.

I would like to thank Dr. David Vega for the fine job he has done as our editor for the last four years. He has worked tirelessly: keeping deadlines; tracking down authors to keep them on deadline; working with staff; and reading, reviewing, and editing every single article you read in each edition of *Common Sense.* He has raised the standard for this publication, and I look forward to working with him as a member of our board of directors.

2012 100% ED Groups

We would like to recognize and thank our newest ED group for participating in our 2012 100% ED Group Membership. We sincerely appreciate the enthusiastic and continuous support of these physicians and their group.

Newport Emergency Physicians, Inc. – RI

AAEM ED Group Membership

AAEM instituted group memberships to allow hospitals/groups to pay for the memberships of all their EM board certified & board eligible physicians. Each hospital/group that participates in the group program will now have the option of two ED Group Memberships.

- 100% ED Group Membership - receives a 10% discount on membership dues. All board certified and board eligible physicians at your hospital/group must be members.
- ED Group Membership - receives a 5% discount on membership dues. 2/3 of all board certified and board eligible physicians at your hospital/group must be members.

For these group memberships, we will invoice the group directly. If you are interested in learning more about the benefits of belonging to an AAEM ED group, please visit us at www.aaem.org or contact our membership manager at info@aaem.org or (800) 884-2236.

For a complete listing of 2012 100% ED Group members, go to www.aaem.org/membership/aaem-ed-group-membership.

From The Editor's Desk - continued from page 2

threat. AAEM is fighting to protect and promote private practice in several ways, and tips or advice published in our newsletter is another small bit of help to emergency physicians who want to start or preserve their own private groups.

One last thing: AAEM has enjoyed steady growth since it was founded, but I don't understand why every single board certified specialist in emergency medicine – who isn't exploiting his colleagues and profiteering from their labor – isn't a member of the Academy. We have had great success recruiting emergency medicine residents as members. I want our newsletter to be a tool you can use to recruit new members who are practicing emergency physicians. Once AAEM's website and *Common Sense* take on their new looks, please put them to good use.

AAEM is the only organization in emergency medicine that has consistently, without exception, from the day it began, defended legitimate board certification. Only AAEM has consistently and without exception fought for individual emergency physicians rather than corporate interests. AAEM has the best educational meeting in our specialty, its annual Scientific Assembly. AAEM dominates the American side of international emergency medicine, with the Mediterranean Emergency Medicine Congress, the Inter-American Emergency Medicine Conference, and starting this fall, the Pan-Pacific Emergency Medicine Congress (I hope to see you in Seoul – the meeting is in a great venue in a magnificent city). What's more, the Academy does all this on a lean budget with extreme efficiency.

Unlike some medical organizations, AAEM's officers, board of directors, state chapter officers, committee chairs, and **even** the editor of its newsletter serve as volunteers – none of us are paid. We believe passionately in the principles that led to the Academy's founding and that it continues to fight for: defending emergency medicine as a legitimate specialty with the same requirements for board certification as other specialties; defending the right of emergency physicians to reap the fruits of their own labor; defending the right of emergency physicians to fair treatment in the workplace; defending the emergency physician-patient relationship from outside interference, whether from tort lawyers, insurance companies, corporations, government bureaucrats, or misguided administrators; and the promotion of education in emergency medicine. While we seem to have finally won the battle for legitimate board certification, and our educational mission is an unqualified success, the other struggles go on. How much success we have in those arenas depends in part on how large our membership is. Do your part. Please.

Dr. Walker may be contacted at cseditor@aaem.org.

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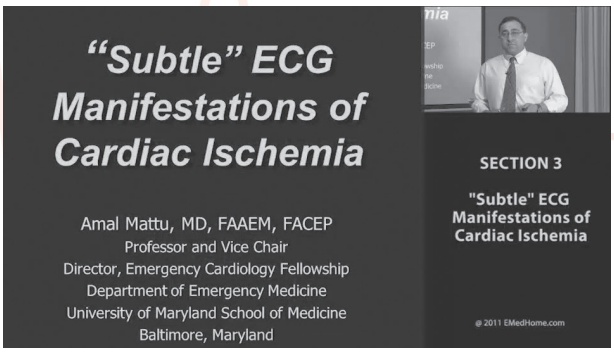

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Levels of recognition to those who donate to the AAEM Foundation have been established. The information below includes a list of the different levels of contributions. The Foundation would like to thank the individuals below who contributed from 1-1-12 to 5-24-12.

AAEM established its Foundation for the purposes of (1) studying and providing education relating to the access and availability of emergency medical care and (2) defending the rights of patients to receive such care, and emergency physicians to provide such care. The latter purpose may include providing financial support for litigation to further these objectives. The Foundation will limit financial support to cases involving physician practice rights and cases involving a broad public interest. Contributions to the Foundation are tax deductible.

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Editorial Feedback

We received the following letter from the spouse of an emergency physician in response to Dr. Blumstein's President's Message in the winter 2011 issue of Common Sense *(vol. 18, issue 4). Dr. Blumstein pointed out that physicians who work for large CMGs, and some equally inequitable local groups, were leaving a substantial amount of money on the table and getting little back for this sacrifice.*

I have heard such complaints from fellow emergency physicians many times. Because of that, I formed the Practice Management Committee last year. The purpose of this committee is to provide guidance to Academy members, so that they may establish and maintain independent, democratic emergency medicine groups. I have also asked that there be a Business of EM track at each Scientific Assembly. AAEM will begin to supply the education and tools that our members need to feel more comfortable with the business side of emergency medicine. This is a priority during my presidency.

William T. Durkin, Jr., MD MBA FAAEM
President

Hello, Dr. Blumstein,

I just read your article of 03/19/12 concerning the question of why EM docs don't take a stand for their pay and work conditions. I am married to just such a doc, and I have been observing this same question for ten years now. I believe I have an answer and a few suggestions to remedy this, which I would like to share with you. Perhaps you have the connections to create changes that will actually turn this situation around for the better.

My husband is a brilliant doctor but has absolutely no concept of how a business runs. It scares the daylights out of him, just like the guys you mentioned in your article. I have watched this situation from a personal vantage, and it makes me ill. When I met and married him and discovered how low the pay was for a guy who literally saves lives all day long, I was shocked. Really? No professional in any field would believe what these docs accept as payment for their critical life-saving work.

The problem: He CAN'T run a business. That's why he settles for the subservient role and allows these management companies to scrape off their big dividends. I believe the same is true for most brilliant and/or creative/artistic people: Maximizing their income potential is the last thing on their mind, while doing what they love makes them feel satisfied enough to ignore less than worthy conditions. I have tried to encourage my husband to look into reforms, but he just doesn't have it in him. His brain channels are all tuned into the business of practicing good medicine.

The solution: Create a "program" with all the moving parts (like computer software) that will give all the details for everything involved in creating and running an ER by a group of EM docs themselves. Create a workshop. Create a seminar, and if necessary, offer hands-on, temporary staffing to set everything up – like a one-time fee/package deal.

I have a degree in design, and one of the classes we took was all about the "business" of design: literally how to set up your own business, which I have been doing for many years now. Does medical education offer such? Do EM docs get this kind of training?

My husband loves to follow a plan to create things, including building his own airplane. But to create anything complex from the ground up without success-proven plans is just not realistic. However, if you gave him a seminar with a syllabus for creating and managing his own ER, I know he would eat it up and do just fine making it happen. He would spearhead a group and find his favorite ER and get it up and running the way only a doc would and could.

I am as frustrated as anyone could be that staffing groups grab and control ER contracts and run EM docs like their slaves. The question you raise is a good one. I hope someone will come forward and create the software and training these docs need to turn the EM field around to give the docs and patients the environment that serves everyone best.

Thank you for listening,
EM Doctor's Wife (Name withheld by request)

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http://www.aaem.org/education/oral-board-review-course

October 23-26, 2012
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Do you have an upcoming educational conference or activity you would like listed in *Common Sense* and on the AAEM website? Please contact Marcia Blackman to learn more about the AAEM endorsement approval process: mblackman@aaem.org.

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Drug Shortages: Advocacy in Action

Michael Ybarra, MD
YPS Secretary-Treasurer

The last few months have been a whirlwind of activity for AAEM, YPS, and RSA. Outgoing RSA President, Dr. Teresa Ross, and I have worked closely on a critical issue affecting every emergency physician: drug shortages.

As Dr. Ross eloquently wrote in the January/February 2012 issue of *Common Sense*, our ability to treat emergent and life-threatening medical conditions is seriously hampered by the national and international shortage of sterile injectable medications and even common oral medications (including antibiotics). My ability to treat a typical migraine has even been challenged by my hospital's short supply of phenothiazines. I recently took an EMS call warning us they were bringing a peri-partum woman seizing. The ED medication Pyxis was out of magnesium, and the pharmacist let us know that we had fewer than 20 grams left in the entire hospital.

Drug shortages are impacting medical care, and we have taken to Capitol Hill to ensure that policymakers know. We have met with the legislative staff of key Senators and attended policy symposia and committee hearings. Our voices are starting to be heard, and we will continue to tackle this issue from a number of angles:

- Regulatory: Congress and the president have the authority to create rules that may help ease drug shortages. Late last year, President Obama issued an executive order that broadened the FDA's reporting of critical drug shortages and expedited regulatory reviews. Congress has several bills working their way through committee that would change the government's regulatory approach to drugs. AAEM, YPS, and RSA have endorsed current congressional legislation S. 296 and H.R. 2445, the *Preserving Access to Life-Saving Medications Act.*
- Financial: The congressional committees with jurisdiction over Medicare and Medicaid are examining ways to incentivize pharmaceutical companies to produce drugs that are on the drug shortage list. Other committees and agencies aim to penalize those who fail to report shortages or engage in price gouging.
- Partnerships: Key alliances with other specialty organizations and stakeholders augment our voice. We are working with the Drug Shortage Summit Steering Group (DSSSG) to provide input to legislators on specific bill language. Through the DSSSG we were able to include "emergency medicine drugs" as a suggestion for draft-bill language.

In the past months, we have met with congressional committees and legislative aids. We have also formed impromptu coalitions with other medical specialty organizations to address this critical issue and ensure that emergency medicine is well represented. However, our time spent on the Hill is greatly helped by the voices of our members. Write a letter encouraging your representative to support the *Preserving Access to Life-Saving Medications Act* and collaborate with congressional colleagues to address this issue in a comprehensive way!

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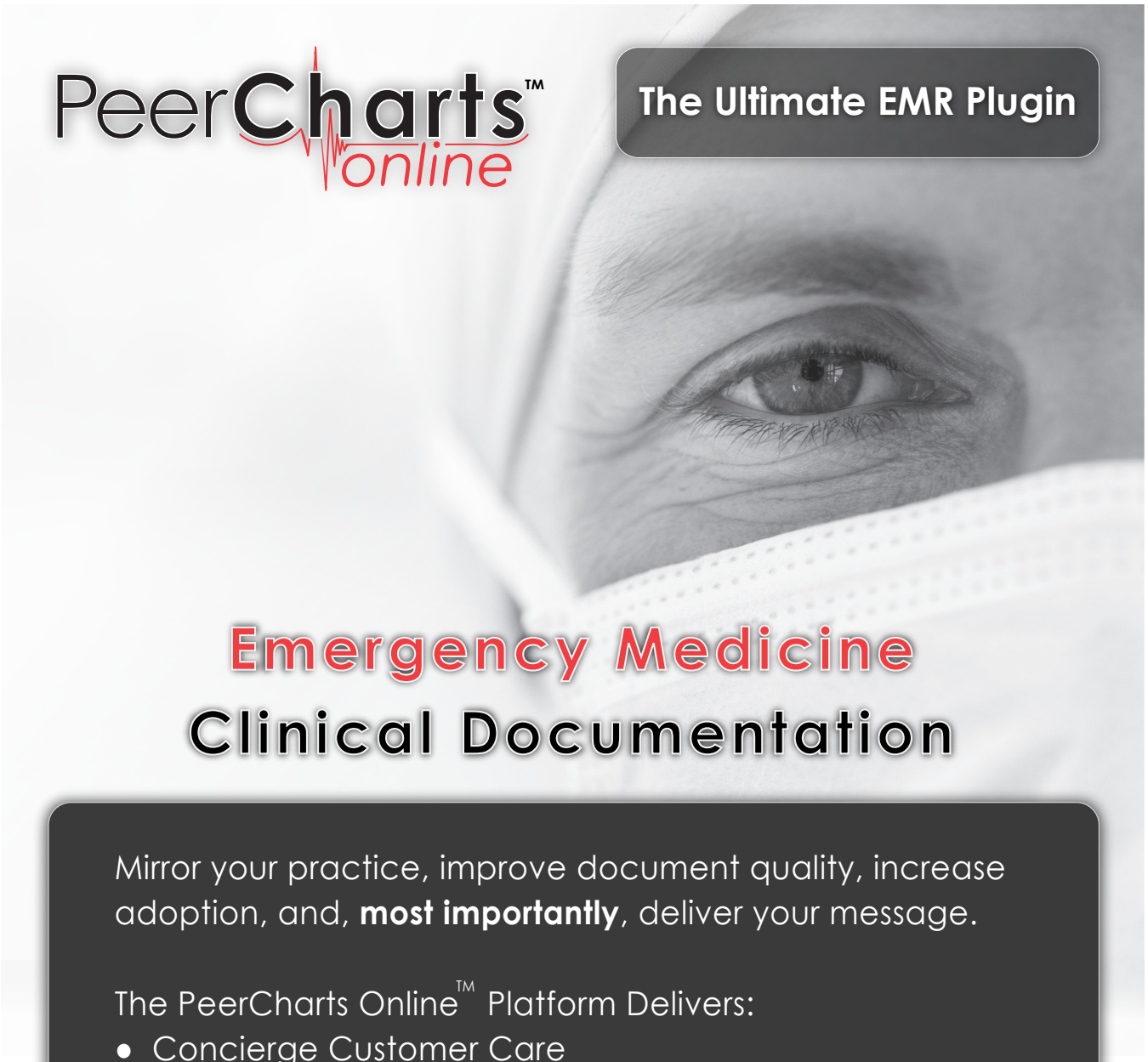

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RESIDENT PRESIDENT'S MESSAGE

So, How Did We Do? Inviting Feedback Promotes Success

Teresa M. Ross, MD
AAEM/RSA Immediate Past President

*In the 2011-12 year, RSA strove to solidify a strong sense of identity for our young resident and student organization. What do we stand for? Not only do we advocate directly for you, our members, offering educational resources and conferences, but we **also** seek to share the values of our parent organization regarding the challenges of the professional world beyond residency.*

How did we do? Give us some feedback!

Feedback is a critical part of all adult learning. If we don't welcome it, we never improve!

As medical students, we get grades. Exams provide an objective measure of factual knowledge. Transitioning into the clinical years, however, faculty commentary becomes increasingly important. Skills like humanism, empathy, and clinical gestalt are subjective traits – and critical ones. One cannot learn clinical acumen from a textbook, nor can one learn from reading alone how to triage sick patients, manage a busy shift, or synergize with your nursing team. Such traits require mentors to emulate and colleagues to give feedback. As residents, these skills are all the more invaluable; they are the qualities that make a good emergency physician into a great one.

Medical schools and residency programs have built constructive feedback to be a natural part of our professional growth. Ideally, our experience with feedback in training will continue throughout our careers, making us life-long subscribers to the value of self-evaluation and self-improvement.

Does it really work? A growing body of literature on feedback in medical training reports limited data but generalized consensus on its importance and effectiveness. A recent review article on feedback concluded that effective feedback is timely, expected, focused, and limited to behaviors that are remediable. Common obstacles include time constraints and fear of negative emotional response from the learner. The article suggested that feedback can be optimized if it is structured, expected, and if teacher and learner are both coached to give and receive commentary.[1] Another educators' consensus panel recommended that feedback be explicit to predetermined performance expectations.[2]

How is it done? Common techniques for faculty feedback are post-shift feedback (both written and conversational), end-rotation evaluation (scored or free comment), and annual review (in person by a program director or associate director). New 360-evaluations have emerged to offer mutual opportunity for residents, nurses, and other support staff to share feedback as well.

Interestingly – but perhaps not surprisingly – how effective feedback is perceived to be can vary; one multi-institutional study survey of EM residents and attending physicians demonstrated increased attending physician satisfaction with quality, timeliness, and frequency of feedback compared to the receiving residents[3]. However, interns in an experimental simulation session for teamwork in trauma gave positive reviews to the dual approach of both lecture and team debriefing.[4]

What's the take-home message? Feedback effectiveness is likely ameliorated by empowering learners to know their own performance expectations and then request and guide their own feedback. Such is the stuff of adult learning – ask often for comments, suggestions, and details. The more often it occurs, the more natural and less intimidating it will be.

So, how did RSA do? We've had a busy year doing what matters to us – representing you! Our projects have included developing and revising our clinical texts (Check out our new *EM Survival Guide*! Watch for our newly revised *Rules of the Road for Medical Students*), adding benefits (Get EM:RAP for free!), advocating on Capitol Hill against drug shortages, planning our resident conferences (It was great to see you all at AAEM Scientific Assembly in San Diego in February!), networking at our RSA-sponsored Medical Student Symposiums, and moving towards a greater electronic media presence (Look for our board review book as e-book and video later in 2012! Follow us on Facebook and Twitter for your free Fact of the Day!).

We've outlined what our performance goals are. We'd love to hear YOUR feedback.

Dr. Ross welcomes your email correspondence at tmrossmd@gmail.com

Check out www.aaem.org/bookstore for member discounts on our clinical texts.

Visit us at www.aaemrsa.org for more information on how to get involved with RSA.

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RESIDENT EDITOR'S LETTER

The Advancing Role of Technology in Emergency Medicine Education and Training: Interview with Amal Mattu, MD FAAEM

Amal Mattu, MD FAAEM

Ali Farzad, MD
AAEM/RSA Publications Committee Chair
Linda J. Kesselring, MS ELS
Copy Editor

In this issue, we stick with the theme stated in my previous articles and continue to explore the evolving role of technology in emergency medicine (EM) education and training. This time, I have the pleasure of interviewing one of the greatest educators of our time, Dr. Amal Mattu, Vice-Chair of the University of Maryland Department of Emergency Medicine. Dr. Mattu is a seasoned clinician with a true passion for EM and is known internationally as one of the premier speakers in our field. He is a well-respected expert in emergency cardiology and electrocardiography and a dedicated teacher who strives to make a difference by delivering quality education about high-risk topics.

Throughout the years, he has developed quite a loyal following because of the entertaining way he is able to present important clinical topics. He is the host of EMCast, a 90-minute monthly podcast in which he discusses recent literature, interesting cases, and current "hot" topics. He has kindly let me ask him a few questions about how technology has affected his teaching and delivery of educational materials, and even provides AAEM/RSA members with access to his new "EKG of the Week" video podcast. Dr. Mattu has created an incredible collection of must-watch videos that teach important EKG interpretation skills and present must-know information that will help you save lives!

AF: *So, Dr. Mattu, please tell us a little bit about yourself and your educational background.*
Dr. Mattu: I went to Johns Hopkins for college, and during that time I was interested in medicine. I grew up in Maryland. Most of my life was spent in Maryland, my family was in Maryland, so I went to medical school at the University of Maryland. I had become interested in emergency medicine relatively early in my career; in fact, I wanted to be "Hawkeye" Pierce from M*A*S*H. That was one of the reasons I went into medicine in the first place.

As I went about choosing what type of residency to go into, I really debated a lot between going into trauma surgery and emergency medicine. I decided that emergency medicine gave more variety to what I wanted to do, so I pursued EM. I decided to leave the Maryland area and went up to Philadelphia for residency and trained at Thomas Jefferson University Hospital. That is where I met my wife, who is a practicing primary care physician now. Her family is also all in Maryland, so coming back to Maryland was naturally an easy decision for us.

I joined the faculty back here at Maryland and completed a teaching fellowship my first year out. My original interest was in geriatric EM, and when I came back to Maryland to join the faculty, I planned to create a curriculum in geriatric EM. Then, one opportunity led to another in emergency cardiology and suddenly I found myself developing an academic niche in electrocardiography. I still really like emergency geriatrics, but I would say that it is my second area of interest now; my primary interest is in emergency cardiology and EKGs.

AF: *What do you think about the role of technology in EM education and training? What are the areas of study that can be supported with technology, in your opinion?*
Dr. Mattu: I am not a "techie" whatsoever. I know how to do a few basic things, and I try not to overdo it when it comes to technology. I think there are a lot of technological things that people do that probably detract from the message. For example, people overuse PowerPoint for sure. They have all kinds of fancy slides with things spinning in, zipping in and flying in from different angles. They include videos and all kinds of things, which in some cases can add to the presentation, but in many cases take away from the learning and take-home points. It can be interesting to watch, but people end up being distracted from the message.

So I think a lot of technology in education can be overused and unnecessary. In many cases, simple techniques are more effective. However, I think that technology can also be very beneficial in some circumstances, especially with training for topics that require visual stimuli like electrocardiography, radiology, or even dermatology. I think of technology as a double-edged sword, in that it can add to the effectiveness of certain types of teaching, but it has to be used wisely, as it can also cause distraction and take away from the message when overused.

I have found podcasting to be a useful way of incorporating technology to help with learning. Like many people, I spend a lot of time in my car and have a long commute to work. I fell in love with the concept of audio learning several years ago, and I do a lot of my continuing medical education (CME) through audio podcasts in my car. I think I learn well that way, and I think a lot of other people find it to be a time-efficient way of learning. Using video makes it a little more limited, as you typically have to sit and watch, while audio provides a bit more flexibility; but the use of technology must be tailored to the topic that is being taught.

AF: *Speaking of podcasts, tell us a bit about EMCast. How did you decide to start your own podcast? What is the goal of the program?*
Dr. Mattu: EMCast is an audio podcast that is housed on the EMedHome website. EMedHome is a great website started by Dr.

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Resident Editor's Letter - continued from page 13

Rick Nunez, an emergency physician trained at Los Angeles County-University of Southern California, who works in the Boston area now. It is really quite an impressive website, with lots of available CME delivered through streaming videos from national lectures, great case presentations, and lots of good written and visual pearls. Back in 2007, I was approached to put together a monthly podcast that would be a small part of EMedHome. It started up as a project to give our faculty an opportunity to do podcasts and to present information relevant to EM clinicians in a fun way.

It's a simple podcast that we do for 90 minutes a month on cutting-edge emergency medicine education. What I do is invite experts to discuss different topics of interest, various best practices, and important review articles relevant to our practice. It is a nice way for people to listen and keep up with what is going on in the world of EM.

AF: *What can current listeners and fans expect from the future of EMCast?*
Dr. Mattu: What I hope to do is create more and more group case discussions. I started by doing one-on-one interviews with an expert on a specific topic, but with group case discussions we go over challenging cases and call on different colleagues to give their opinions on how to approach these tough cases. For example, we might go through a difficult sepsis case and ask our airway expert, Dr. Ken Butler, how he would deal with the airway, then turn it over to our critical care expert, Dr. Michael Winters, for his approach to management using evidence-based practices, and then call on Dr. Bryan Hayes, our clinical pharmacist, for specifics about some of the drug-related issues we need to consider for the case. Frankly, it's just a lot more fun to get together with colleagues providing different perspectives to create a podcast that is ultimately more useful for listeners.

A.F.: *As an educator, how do you incorporate technology to make education and training more effective and efficient for your students and residents?*
Dr. Mattu: Most of what I do is pretty basic from a technology standpoint. A lot of my teaching is done through group discussion and lectures, which I try to make as interactive as possible. I use very simple PowerPoint slides merely as a supplement to deliver the message. I have also been learning to incorporate more technology from our colleagues like Dr. Mel Herbert and Dr. Rob Rogers, who are more tech savvy.

One thing I have started to use is an iPad app called Air Sketch, which can be used as an alternative to a laser pointer to draw attention to specific parts of my PowerPoint slides. I can project my lecture slides and use my iPad to navigate through the slides and point things out or draw right on the slides in real time. It is pretty simple to use and has been pretty effective for my live lectures and my EKG video podcasts. I started recording these short EKG lessons on a weekly basis last fall. With the help of our IT department, we have been able to post these lessons on a website (http://www.ekg.umem.org) that gives users access to the videos and allows people to learn at their own pace. I try to focus on important cases where competency in EKG interpretation can make huge differences in the way patients are treated. I encourage residents and students to check out the videos and see if it is a useful way for them to learn.

AF: *"Techie" or not, you have clearly incorporated technology successfully to supplement your teaching for many years. What advice do you have for new educators who would like start using technology to improve their teaching and practice?*
Dr. Mattu: Well, the first bit of advice that I would have for young educators is to not go too crazy with trying to incorporate technology. I would focus on starting by learning some good, strong, basic teaching skills. Learn how to be effective at leading small-group discussions. Learn how to give good, interesting and interactive lectures that don't rely solely on technology to deliver the lesson. Once you have those teaching skills as a foundation, then you can start sprinkling on some technology to help get the message across. In other words, let the technology be the icing on the cake but not the cake itself.

AF: *Good point! Last question. What advice would you give to current residents and students who are looking to make their learning as effective and efficient as possible?*
Dr. Mattu: I recommend that residents and students try to expose themselves to many different forms of CME as early as possible, in order to discover what works best for them. People learn in different ways: Some people do well with reading, some with audio, and others with videos. In order for you to find out what works best, you need good exposure to all the different teaching media available. Once you find out what works best, focus on that.

Remember that learning should also be as interactive as possible. Teaching is also a great way to solidify your knowledge, so I encourage residents to think about becoming teachers themselves.

Resident Editor's Note: AAEM/RSA continues to support the education of our members. We are proud to offer you access to the "EKG of the Week" video blog, compliments of Dr. Mattu and the University of Maryland Department of Emergency Medicine. Log on to http://www.ekg.umem.org *to watch these videos from any computer or mobile device.*

Please send comments and suggestions for future articles about technology and emergency medicine to alifarzadmd@gmail.com.

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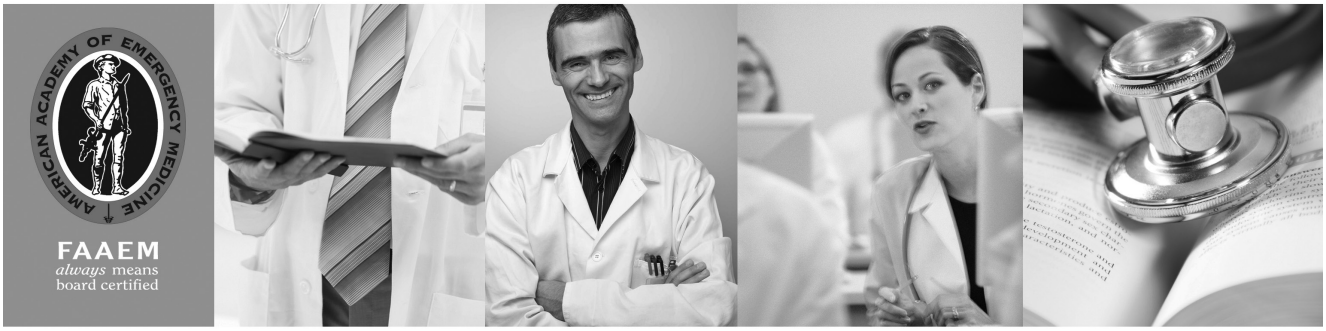

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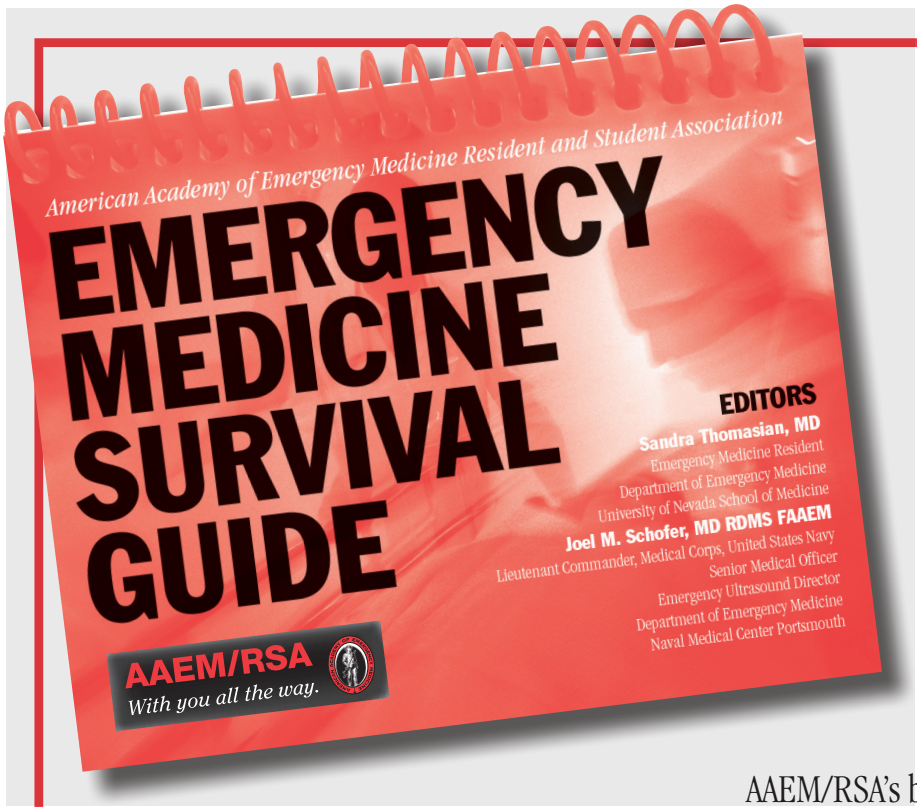

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Spotlight on Leaders in Emergency Medicine: Dr. Michael Epter

Interview by Leana S. Wen, MD MSc
AAEM/RSA President

Michael Epter, DO FAAEM

This is a new column in Common Sense *where Dr. Leana S. Wen, AAEM/RSA president, interviews leaders in emergency medicine about their experiences, perspectives, and insights. The fifth installment is a conversation with a leader in EM and AAEM: Dr. Michael Epter. Dr. Epter is the Program Director and Vice-Chair of Education at the University of Nevada. He has held a number of leadership roles, including President of the Young Physicians Section, member of the AAEM board of directors, and Chair of the Education Committee. Dr. Epter is a recipient of AAEM/RSA's Program Director of the Year award.*

LW: *Tell me about your current position and what you do.*

Dr. Epter: I currently serve as the Program Director and Vice-Chair of Education at the University of Nevada. Our program is located in the heart of Las Vegas at University Medical Center, which is the only Level 1 Trauma Center and Burn Center in the state of Nevada. As expected in my current position, the majority of my efforts are devoted to being a clinician-educator, with a smaller portion directed toward research. Teaching is my passion and finds itself at the heart of everything I do. It makes working not a job, but a profession that I am privileged to be part of.

LW: *Where are you from and where you did you get your training?*

Dr. Epter: I am originally from New York. I attended New York College of Osteopathic Medicine and completed my residency at Albert Einstein College of Medicine at Beth Israel Medical Center in New York City. My initial practice environment was not as an academician, but rather in a community ED within Brooklyn. In 2005, I relocated to Las Vegas, NV, to initiate the process of starting an EM program that began in 2006.

LW: *Why did you choose emergency medicine?*

Dr. Epter: Like many of us, my decision to enter EM was multifactorial. I did have some initial exposure to EM through EMS, but while progressing through medical school and starting clinical rotations, I could not find my passion within the "core" rotations. It was during my EM rotation that I developed a strong affinity for what I feel we do better than any other specialty: treating/managing patients with undifferentiated medical problems. What I didn't know then but have realized over time is the breadth of EM and how many primary, "front line" opportunities there are for us to have an impact and feel rewarded professionally as well as personally.

LW: *You've been a leader within AAEM in a variety of capacities. How did you first get involved?*

Dr. Epter: As for many of us, my initial exposure to AAEM came during my residency training, when Dr. Robert McNamara visited our program. I appreciated and admired the advocacy that the organization was providing for emergency physicians' practice rights, as well as ensuring academic standards and professional integrity. I joined with the sense of confidence and support from the knowledge that AAEM "has my back." What got me more involved beyond that was an email about the website 911emergency.org. This is a database of hospitals that have EDs staffed by at least one board certified emergency physician 24 hours a day, seven days a week. At the time, the hospital I was working in qualified for this website, and I was proud of this and of informing the global community of EPs. All I did was complete a one-page verification, but I felt a tremendous sense of duty: I was being an advocate for our profession and letting our patients — the ones we serve — know that there is a difference in whom is providing their care. This just illustrates how one simple action can be life-changing and how little it can take to begin to make a difference.

LW: *What would you say to trainees and young EPs about why to get involved in AAEM?*

Dr. Epter: This is simple: You are the organization's future! I truly believe that all individuals have the ability to do great things. This is a conscious choice — embrace it! You too can play an integral role in advancing our field amidst the evolving challenges of our specialty: workload, patient satisfaction, overcrowding, board certification, wellness, and corporate practice without democratic principles/management. Even though we continue to increase our membership, I relish the fact that we are still a smaller organization; this affords opportunities for young EPs to routinely meet people and develop lifelong mentoring relationships. As previously mentioned, the concept of "having your back" is easily felt, due to our close-knit nature within AAEM. It is this mutual support that defines the practice of EM and gives us the ability to care for our patients.

LW: *What do you see as the future of EM?*

Dr. Epter: While I continue to be passionate about EM and privileged to count myself amongst the many EPs within the field, I believe it is wise for all of us to approach the future of EM with cautious optimism and not have unbridled enthusiasm. The future holds many unknowns and potential concerns. This summer, we await the decision of the Supreme Court on the health care bill which could certainly impact our daily practice. Already, we face increasing demands on our practice that I mentioned previously. In addition, there is the potential that we will be asked by hospitals to provide services beyond our scope of practice in an effort to reduce costs. Tort reform is still an issue to tackle at the legislative level. My ultimate concern beyond the aforementioned is the transition and rebranding of EM into a business, whereby the primary focus becomes metrics (e.g., door-to-doctor times, productivity, RVU/pt, etc.), rather than the critical physician-patient therapeutic relationship. There needs to be a balance between the business aspect and bedside care, otherwise there could be worse and higher burnout among EPs. These are some of the issues that AAEM leaders are addressing today and that leaders like you can have an impact on tomorrow by becoming an advocate for your profession, your colleagues, and your patients.

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LW: *What advice on leadership do you have for young EPs?*
Dr. Epter: The word "leadership" conjures up a vast range of emotions for me, ranging from fear and apprehension (think of your first ever intubation) to excitement and inspiration (think of your first successful resuscitation or cricothyrotomy on a patient with angioedema, or graduating and landing the "perfect job"). My bottom line on leadership is the following: Be ferociously persistent in the pursuit of perfection of what you are trying to obtain. Maintain your vision. Perfection may outdistance you, but you will end up achieving excellence. Though "ferocious" in your persistence, be humble at the same time.

One of our great presidents, President Truman, noted that as long as you don't mind who gets the credit, you can accomplish great things in life. Take your ego out of it. So, under-promise and over-deliver, "walk the talk," and finally, nothing is ever achieved without passion and giving thanks to people who supported you in the process.

Editor's note: We would love to have your feedback on this new column. Please send comments and suggest other leaders you would like to see profiled to wen.leana@gmail.com.

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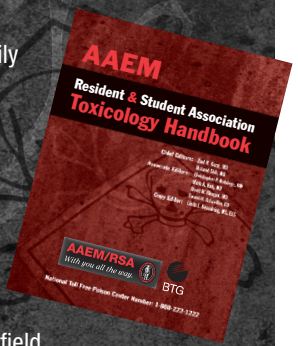

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Resident Journal Review: Ultrasound Measurements of the Inferior Vena Cava Collapse as a Determinate of Intravascular Volume Status

Michael Allison, MD; Ali Farzad, MD; David Wacker, MD; Dan Boutsikaris, MD; Adam Brenner, MD; Michael Scott, MD
Edited by Chris Doty, MD FAAEM; and Michael C. Bond, MD FAAEM

This edition of the Resident Journal reviews the utility of ultrasound in measuring the inferior vena cava (IVC) as a surrogate of intravascular volume status and then reviews the recent literature to determine how best to integrate ultrasound measurements of the IVC into your clinical practice.

Introduction:

In the 1980s cardiologists began using the size of the inferior vena cava (IVC) as seen on ultrasound (US) as a surrogate for the right sided filling pressures of the heart.[1] Over time, this concept has been investigated in patients in a variety of settings such as hemodialysis clinics, cardiac units, intensive care units (ICU), and the emergency department (ED). The emergency medicine-based literature has looked at this modality for assessing volume status over the past 15 years. Despite this research, there are still many questions about the utility of US assessments of the IVC, such as determining a standard anatomical location to measure the IVC, determining the reproducibility of measurements among different providers, and the ability of IVC collapse (defined below) to assess volume status and to predict volume responsiveness.

Measuring the IVC and Measurement Reliability

The IVC can be measured using transabdominal US via a phased array or curvilinear abdominal probe. The IVC has been measured in both transverse and sagittal planes, and depending on the study, measurements have been done anywhere from the right atrial border, superiorly, to the renal veins, inferiorly. The IVC collapse index is also referred to as the caval index. The IVC collapse index is calculated during one respiratory cycle. It is the maximum diameter minus the minimum diameter of the IVC divided by the maximum diameter. It's typically expressed as a percentage, also referred to as percent collapse.

The IVC collapse index (IVC-CI) = (IVC_{max} diameter – IVC_{min} diameter) / IVC_{max} diameter.

The first article discussed below looks at whether measurement location affects the IVC collapse, and the second article investigates whether reproducible measurements of the IVC can be made by different providers.

Inferior Vena Cava Percentage Collapse During Respiration Is Affected by the Sampling Location: An Ultrasound Study in Healthy Volunteers. Wallace DJ et al. *Academic Emergency Medicine* 2010; 17:96-99.

This study examined the effect of the measurement location on IVC collapse. This was a sampling study of healthy volunteers performed at an academic emergency department by an experienced resident sonologist. The study was designed to look at three portions of the IVC. First, a view of the IVC at the level of the diaphragm was obtained in the sagittal plane, and the collapse of the IVC was measured where the IVC enters the right atrium. The second measurement was obtained 2cm caudal to the hepatic vein entering the IVC in the sagittal plane, and the final view was taken in the transverse orientation at the level of the renal veins.

Thirty-nine volunteers were enrolled, and the mean IVC collapse was calculated at each of the three measured sites. All images were reviewed by a fellowship-trained emergency sonologist. In these healthy volunteers, the measured values for IVC collapse were not significantly different when measured at the level of the hepatic vein or renal vein. Measurements obtained at the border of the right atrium had a significantly smaller percent collapse than at the other two sites.

This study suggests that measuring the IVC near the inlet of the hepatic vein or at the level of the renal veins provides more reliable results than measurements at the right atrial border. This is helpful, as about 10 percent of patients are unable to have the IVC visualized at all locations within the abdomen. This study is limited by its use of healthy volunteers. It is not clear whether there may be regional differences in IVC collapse in patients with hypovolemia, shock states, or those receiving vasoconstrictor infusions. Measurements of the IVC were made either in the transverse or sagittal (longitudinal) plane depending on the site of measurement. It is not clear whether different values may be found at the same site depending upon the orientation of measurement. Further studies would help define a standardized approach to the measurement of the IVC, and these results should be validated in hypotensive patients.

The Interrater Reliability of Inferior Vena Cava Ultrasound by Bedside Clinician Sonographers in Emergency Department Patients. Fields M, Lee P, Jenq K et al. *Academic Emergency Medicine* 2011; 18:98-101.

Prior to this study by Fields et al., the inter-rater reliability of IVC-US among emergency physicians (EPs) had not been studied. Fields et al. investigated whether emergency bedside ultrasound was a useful and repeatable modality for intravascular volume assessment. They also attempted to determine whether alternative methods of IVC-US, such as visual estimation and brightness mode (B-mode) diameter and area measurements, were as reliable as the traditionally used motion mode (M-mode) diameter measurements.

The authors performed a prospective observational study that used a small convenience sample of patients from an urban ED in April 2008. The enrolling EPs were comprised of four senior residents and one US fellow. All had met the training requirements for emergency ultrasonography as delineated by the American College of Emergency Physicians (ACEP) guidelines and had undergone

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an additional standardized one-hour training session in IVC-US followed by 10 proctored and reviewed exams. Inclusion criteria included age over 18 years, non-pregnant, and the ability to tolerate supine positioning for the US examination. Separate IVC studies were performed on each patient by two different EPs fewer than 15 minutes apart. Each EP was blinded to the findings of the other and to the patient's clinical data. They all recorded a visual estimation of inspiratory IVC collapse (0% – 100%), then recorded a ''gestalt'' estimation of volume status by combining visually estimated collapse with the visual appearance of IVC size and shape (documented as either hypovolemic, lower range of normal, higher range of normal, or hypervolemic). Lastly, they each performed caliper measurements of the IVC using M-mode and B-mode. All studies were captured with video clips and still images for expert analysis. All studies were reviewed by a sonographer with more than 10 years of experience to determine correct vessel identification and caliper placement. Expert review found no studies to be inadequate.

Demographic and clinical information was obtained from 46 patients after the five EPs completed a total of 92 studies (two per patient). Inter-rater reliability was calculated for each US method using a one-way random effects model to estimate intraclass correlation coefficients (ICCs) for continuous variables and Cohen's linear weighted kappa (κ) for categorical variables. In addition, the effects of the sonographer and patient characteristics on ICC values were analyzed. In summary, agreement for visually estimated IVC collapse (0.60, 95% CI = 0.36 to 0.76) was similar to agreement for calculated M-mode IVC collapse index (0.52, 95% CI = 0.27 to 0.71). Inter-rater agreement for gestalt assessment of volume status using visual estimation was substantial (κ = 0.64, 95% CI = 0.46 to 0.78). There were no statistically significant differences in IVC measurements by various caliper methods (B-mode diameter, B-mode area, and M-mode diameter). Analysis of M-mode diameter measurements revealed that IVC-US experience and the patients' volume status were significantly associated with inter-rater reliability. There was significant improvement in inter-rater reliability when assessing hyper- and hypo-volemic patients and when EPs had performed at least five previous exams. Inter-rater reliability was not significantly associated with sonographer training level, patient respiratory rate, or body mass index.

This study showed strong agreement between EPs for M-mode IVC diameter measurements, and agreement for M-mode IVC-CI was moderate to good. Based on the study results, both measured and visually estimated IVC assessments seem similar and repeatable among different providers. Some potential sources of error in this study were recognized and included selection bias arising from convenience sampling and measurement bias that may have occurred if EPs tried to match measurements to their previously determined visual estimates. Also, study EPs may have enrolled patients they felt more confident about scanning. Finally, since clinicians were aware that their measurements were being studied, the Hawthorne effect maybe have been a factor.[2] The expert review process was designed in an attempt to limit such bias by reviewing for inappropriate measurements, and no such measurements were identified.

Overall, this study shows that EP measurement of inferior vena cava diameter has a fairly high degree of inter-rater reliability. The use of the visual estimation technique should be considered by EPs who have learned to obtain measured parameters of inferior vena cava filling, since it seems equally reliable to traditional M-mode measurements and can be performed more rapidly.

Qualitative Estimates of IVC Collapse

In the busy ED, quick assessments can lead to swift and appropriate therapies. Like the qualitative arm of the Fields study above, the next study looks at whether qualitative estimates of IVC collapse and left ventricular (LV) function can approximate measured values of IVC collapse or LV shortening.

Comparison of Serial Qualitative and Quantitative Assessments of Caval Index and Left Ventricular Systolic Function During Early Fluid Resuscitation of Hypotensive Emergency Department Patients. Weekes AJ et al. *Academic Emergency Medicine*. 2011; 18(9):912-21.

This prospective, observational study investigated how visual estimates on bedside ultrasound of LV function and IVC respiratory dynamics correlated with more detailed, quantitative measurements. This study did not set out to determine if any of the measurements correlated with the patient's fluid status or fluid responsiveness. The population for the study was patients older than 18 years arriving at the ED with systolic blood pressure (SBP) of <100mmHg or mean arterial pressure (MAP) <65mmHg, in sinus rhythm, and whose physician had the intent to give a fluid bolus of 20mL/kg or more. Exclusion criteria included unstable or absent cardiac rhythm at presentation, Advanced Cardiac Life Support (ACLS) in progress, suspected congested heart failure (CHF), inability to obtain adequate ultrasound images, pregnancy, trauma patients, inability to tolerate positioning for ultrasound, or predicted stay in the ED of fewer than 45 minutes.

All patients first had their IVC visualized in the longitudinal orientation 3cm caudal to the junction with the right atrium and its respiratory variation visually estimated using a three point scale: 1 = decreased (presumed to correlate with Caval Index (CI) of 0.0-0.3), 2 = normal (correlating to CI 0.31-0.69), or 3 = increased (correlating to CI 0.7-1.0). M-mode was then used to quantitatively measure the CI. The visual estimate score was then compared to the quantitative measurement.

Similarly, the left ventricle was visualized in the parasternal long axis. Using multiple visual indices of LV function (close approximation of anterior mitral leaflet to septal wall, significant thickening of the posterior LV wall in systole and significant movement of the septal and posterior walls toward each other), a visual estimate score of LV function was determined: 1 = severely depressed, 2 = moderately depressed, 3 = normal function, and 4 = increased function. The LV diameter was then measured at end-diastole (LVEDD) and end-systole (LVESD), and a quantitative measurement of the fractional shortening (FS) of the LV calculated (FS = (LVEDD-LVESD)/LVEDD).

Twenty-four patients underwent enrollment, and 72 videos of CI were obtained from a convenience sample of ED patients. Emergency US division physicians performed all studies and were trained in a

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standard method of measuring CI and LV function. The main findings of this article were that visual estimates of IVC respiratory dynamics and of LV function correlated well with their respective quantitative measurements and that there was moderately good interobserver reliability in determining the visual estimate scores for a given patient. For the IVC collapse there was a Spearman correlation coefficient of r = 0.81 (p <0.0001) between visual estimates and measured indices. The main limitation to the study was that the same person performed the ultrasound evaluation for both the visual estimate and the quantitative measurements, which may have introduced an element of bias in determining the quantitative measurements. Though the authors comment on the changing size of the IVC over time, this study did not set out to measure the correlation of any of these measurements with the patient's fluid status or responsiveness.

Visual estimates of IVC respiratory function and LV function are an acceptable estimation of more detailed quantitative measurements, and therefore likely useful as a quick, bedside measurement to help in decisions regarding a patient's fluid management.

Using IVC Collapse to Assess Volume Status

In the ICU population, US measurements of IVC variation have been found to predict fluid responsiveness. Feissel and Barbier independently found that mechanically ventilated patients with an IVC variation of greater than 13 to 18 percent could have their cardiac output augmented with fluid boluses.[3,4] These studies were designed to look for changes in the IVC in patients on mechanical ventilation without any spontaneous respirations, with tidal volumes of at least 8ml/kg, and who had no arrhythmias. Extrapolating these results to the ED population is difficult, so some investigators have sought to correlate IVC collapse with measurements of central venous pressure (CVP). These results should be interpreted with caution. There has been an abundance of recent literature suggesting that CVP measurements do not accurately predict volume responsiveness.[5,6,7,8] The next two articles discussed found a positive correlation between IVC measurements and CVP measurements.

Emergency Department Bedside Ultrasonographic Measurement of the Caval Index for Noninvasive Determination of Low Central Venous Pressure. Nagdev A, Merchant R, et al. *Annals of Emergency Medicine* 2010; 55:290-295.

The authors of this study looked at the correlation between CI and CVP measurements. They hypothesize that the two will be correlated, with a high CI being suggestive of a low CVP.

This is a prospective, observational study, looking at a convenience sample of patients within the critical care area of an academic ED. Eighty-two patients were initially enrolled, though nine were excluded due to the inability to obtain adequate US images. Inclusion criteria were the need for central venous catheter (CVC) placement and invasive hemodynamic monitoring as determined by the treating emergency physician. US measurements were performed with the patient in a supine position, and both inspiratory and expiratory IVC diameters were measured 2-3cm caudal to the right atrial border. Sonographers were blinded to the CVP measurements, which were obtained after the US examination. The sonographers were all experienced in bedside US. They were either US fellows or the US fellowship director of the institution's EM US fellowship program.

Of the 73 patients included, 32 percent had a CVP of less than 8 mmHg. The correlation between CI and CVP was -0.74. The investigators looked at the ability of a CI of greater than 50 percent to predict a low CVP (<8mmHg), finding a sensitivity of 91 percent and a specificity of 94 percent.

There are multiple limitations to this study that should be addressed. Patient selection was not randomized and was taken from a convenience sample of patients with a mixture of different shock states, mechanically ventilated, and spontaneously breathing patients. Further, sonographers included US fellows and a fellowship director, raising questions as to the applicability to providers with less experience with bedside US. In addition, the time between US examinations and CVP measurements and the amount of intravenous fluid administered to patients was not standardized, though the investigators tried to limit the time between measurements. Finally, though a CI of greater than 50 percent was shown to strongly correlate with a CVP of less than 8mmHg, other critical care literature has cast doubt upon the reliability of CVP as an accurate surrogate for volume responsiveness.[5,6,7,8] There are certain patients whose hemodynamic parameters and perfusion may improve with an intravenous fluid challenge despite having elevated CVPs.[6] As a result, the CVP may not be the most useful clinical parameter to guide volume resuscitation.

Though this study supports the notion that the CI may accurately predict CVP, the failure to distinguish between volume status and volume responsiveness questions its clinical utility. However, US determination of the CI may serve as a reliable, non-invasive, and rapid beside test to ascertain a general assessment of volume status prior to the availability of additional clinical parameters that require more time-consuming and invasive testing.

Inferior Vena Cava Diameter Correlates with Invasive Hemodynamic Measures in Mechanically Ventilated Intensive Care Unit Patients with Sepsis. Schefold JC, Storm C, Bercke S, et al. *The Journal of Emergency Medicine* 2010; 38(5):632–637.

The purpose of this study was to assess whether IVC diameters correlated with invasive measurements of hemodynamic status and markers of pulmonary edema or acute lung injury.

This prospective study included 30 consecutively sedated patients with septic shock or severe sepsis at a tertiary care center in Germany with a 24-bed medical ICU and a 14-bed anesthesiological ICU. They defined "shock" as the presence of a SBP ≤90mmHg or MAP ≤70mmHg for at least one hour despite adequate fluid resuscitation, adequate volume status, or the use of vasopressors in an attempt to maintain a SBP ≥70mmHg. All patients were ventilated with a pressure control mode. All blood pressure measurements were obtained from an arterial line. Exclusion criteria included patients under 18 or over 90 years of age, structural liver disease (seen on ultrasound or known via history), or signs of increased intra-abdominal pressure.

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Measurements were taken of the IVC diameter in a longitudinal axis in a blinded fashion by two independent ICU physicians at the end of inspiration and end of expiration in a subxiphoid location 2cm distal to the IVC-hepatic vein junction, where the anterior and posterior wall of the IVC were easily visualized. Calipers were used to take the measurements using the trailing edge to leading edge technique. At the time of the measurement, no patient was spontaneously breathing, and the CVP was measured in the supine position.

The results of this study showed significant correlation between expiratory IVC (eIVC) and inspiratory (iIVC) diameter and CVP. The authors also examined other surrogate hemodynamic markers for pulmonary edema and found correlation between both IVC diameters and extravascular lung water (EVLW), extravascular lung water index (EVLWI), intrathoracic blood volume (ITBV), intrathoracic blood volume index (ITBVI), intrathoracic thermal volume (ITTV) and PaO2/FiO2, with all p-values ≤0.05.

Although these results are thought-provoking and may lay some groundwork for additional areas of study, they did not provide sufficient data to delineate cutoffs for fluid responsiveness. The authors noted that the patients included in this study did not represent the majority of septic patients evaluated and treated in the ED, as these patients had already been volume resuscitated and were on mechanical ventilation at the time of their IVC measurements. This study did not detect a correlation between the change in IVC diameter (delta-IVC) and CVP, EVLW, EVLWI, ITBV, ITBVI, ITTV, or PaO2/FiO2. This data was not shown and is believed to be the result of a "well hydrated" study population. This study suffers from the same limitations as the Nagdev study in that it attempts to correlate IVC measurements with CVP, which may not be a useful surrogate for measuring volume responsiveness. There is insufficient data to change current clinical practice, and further studies on IVC collapse before and after volume resuscitation are needed.

Role of Inferior Vena Cava Diameter In Assessment of Volume Status: A Meta-Analysis. Dipti A., Soucy Z., et al. *American Journal of Emergency Medicine*. 2012 [Epub ahead of print Jan 4, 2012]

A growing body of literature exists that has examined the correlation of IVC diameter with volume status; however, many of these studies have a limited sample size.[9,10,11,12] To address this, Dipti et al. performed a meta-analysis on available studies of IVC assessment in the ED patient population. They specifically examined the usefulness of IVC measurements in patients not on mechanical ventilation.

Studies for their analysis were generated by a search of popular databases (EMBASE, EBM reviews, Ovid Medline, SCOPUS, and Web of Knowledge) in March and August of 2011. Search results were then filtered in two phases, the first using title and abstract and the second by a full review of the articles. Criteria for inclusion were prospective study design, use of adult ED patients, and report of IVC diameter measurements by US in both hypotensive and control patients. Criteria for exclusion were use of mechanically ventilated patient population, sample size less than 10, or reviews not based on original research. Application of these criteria reduced the database search population of 140 records to five eligible studies. Of these studies, three were done on hypotensive trauma patients, one on trauma and GI bleed patients, and the last on hypotensive patients presenting to the ED. Three of the studies employed a case-control design, and two employed a before-and-after study design, comparing IVC diameter in each patient before and after fluid challenge.

In all five studies, (1) patients were selected without bias, (2) initial judgment of patient volume status was made without knowledge of the IVC diameter, (3) control groups were clearly defined, (4) identical techniques were used to measure IVC diameter in both the hypotensive (or before-fluids) group and control (normotensive or after-fluids) group, and (5) ultrasonography personnel were judged by the study authors to be adequately trained.

The authors extracted from each study measurements of the IVC diameter at the hepatic segment during expiration (the point in the respiratory cycle at which IVC size is maximized). There was a trend toward smaller IVC diameters in hypotensive patients relative to normotensive controls with a mean difference of 6.3mm (95% CI: 6.0mm – 6.5mm), supporting the notion that IVC diameter varies with volume status. It should be noted though, that inter-study variability of IVC diameter measurements in both the hypotensive and control groups was quite large. In the hypotensive group, measurements ranged from 5.6mm to 15.5mm, and in the control group there was similar variability from 10.7mm to 29mm, depending on the study. The source of this variability is unclear, as measurements were consistently made in the expiratory phase of the respiratory cycle and at the hepatic segment of the IVC. The authors suggest that ethnic differences between study populations may account for this variability. Inter-operator variability or subtle differences in study protocols may also contribute. Regardless of the reason, the fact that the IVC diameter for hypotensive patients in some studies is actually greater than that for normotensive patients in other studies indicates that careful efforts must be made to standardize measurements before IVC diameter can be used to judge volume status.

This meta-analysis of studies comparing IVC diameter in hypotensive versus normotensive individuals demonstrates a trend towards a decreased IVC size in the hypotensive group relative to the control group. There are many limitations inherent to this study. The authors include Weekes' study in the analysis, even though Weekes states his study was designed to correlate visual estimates of CI with quantitative measurements, and attempts to correlate CI with fluid resuscitation was "not the primary goal of [their] study".[13] This meta-analysis finds that after fluid resuscitation the IVC diameter changes, which is not surprising. An increase in the size of the IVC does not mean a patient is fluid or volume responsive. Measures such as cardiac output, stroke volume variation, or even blood pressure were not reliably or consistently examined to see if patients clinically changed when their IVC diameter increased. The significant heterogeneity of measurements between studies in both the control and hypotensive groups suggests that additional research and standardization is needed. The conclusions by the study authors should be interpreted with caution.

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Take Home Points:

1. Measurements of the IVC can be taken at the level of the hepatic vein or the renal veins.
2. Visual estimates of IVC collapse are likely an acceptable estimation of more detailed quantitative measurements.
3. Providers with experience in IVC-US can reliably measure the IVC.
4. The IVC collapse index correlates with measurements of CVP, but must be interpreted carefully.
5. VC collapse has never been shown to predict fluid responsiveness in spontaneously breathing patients.

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2011-2012 100% Residency Programs

We would like to recognize and thank the following residency programs for participating in our 2011-2012 100% Residency Program membership. We sincerely appreciate the enthusiastic and continuous support of these programs.

Advocate Christ Medical Center
Baylor College of Medicine
Baystate Medical Center
Beaumont Health System
Beth Israel Deaconess
Boston Medical Center
Brigham & Women's Hospital
Case Western MetroHealth
Conemaugh Valley Memorial Hospital
Florida Hospital
Georgetown/Washington University Hospital
Hennepin County Medical Center
Henry Ford Health System
Indiana University
Kern Medical Center
Johns Hopkins University
Louisiana State University Health Sciences Center
Marietta Memorial Hospital
Medical College of Wisconsin
Morristown Memorial Hospital
Ohio State University
Penn State – Hershey Medical Center
Regions Hospital
Southern Illinois University School of Medicine
Stanford University Hospital
St. Luke's University Health Network
Temple University Hospital
Texas Tech University
Thomas Jefferson University Hospital
UNECOM - Kent Hospital
University of Arkansas
University of California – Irvine
University of California – San Diego
University of California – San Francisco
University of Chicago
University Hospitals, Case Medical Center
University of Louisville
University of Maryland
University of Michigan
University of Mississippi
University of Nevada Las Vegas
University of Oklahoma
University of Wisconsin Hospitals and Clinics
Vanderbilt University
Wake Forest University Baptist Medical Center
York Hospital

MEDICAL STUDENT COUNCIL IMMEDIATE PAST PRESIDENT'S MESSAGE

Thank You for a Great Year

Meaghan Mercer
AAEM/RSA Immediate Past Medical Student Council President

It is with the deepest gratitude that I bid you adieu as a medical student and take my first steps as a resident this July. Guiding the medical student council over the last three years has been an honor, and I appreciate all of your support for this phenomenal organization. I continue to stand behind the belief that education and communication are key. AAEM/RSA gracefully facilitates the development of students so that they can understand not only the science behind medicine but also understand the actual practice of medicine, allowing a smooth transition from student to doctor. Your investment in AAEM promotes your future as well as making a donation to furthering emergency medicine.

It is with the most sincere enthusiasm that I pass the reins to Mary Calderone. She continues to impress me with her strong leadership skills and dedication to the field of emergency medicine. She has an impressive list of accomplishments that assure me that she will continue the strong legacy that has been shown in the past. Mary not only has a notable list of credentials, she also has an enthusiasm for life and learning that is contagious and a joy to be around. She will do an outstanding job!

I would like to thank the 2012-2013 medical student council for all their hard work over this last year and the resident board for all their support. But, most of all, I would like to thank all of you. Your membership is what gives us strength as an organization, and we strive to improve RSA every year to offer more benefits to aid you on your journey. We hope to see you as a member again, and I can promise a great year to come.

MEDICAL STUDENT COUNCIL PRESIDENT'S MESSAGE

Mary Calderone
Medical Student Council President

I would like to thank Meaghan Mercer for her exceptional work as the AAEM/RSA Medical Student Council President. I am extremely excited for my term as the incoming president and aim to carry on the great success that the outgoing council has achieved. It is truly an honor to represent AAEM/RSA's student members and ensure that the organization serves and advocates for them as effectively as possible. Over the next year, I will work with the other members of the medical student council to increase student membership. The regional representatives and I will reach out to EMIGs across the country in order to communicate all that AAEM/RSA offers students, as well as to receive input about ways to further expand AAEM/RSA's benefits to students. We will also ensure that the regional symposiums reflect the needs of AAEM/RSA's student members and can most effectively educate and advise them in their pursuit of a career in emergency medicine. I will frequently provide updates on the medical student council's progress. Please contact me or the other members of the medical student council at any time with ideas, questions, or concerns info@aaemrsa.org.

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