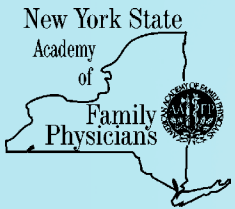


Volume two • Number three

Winter 2014

Family Doctor

A JOURNAL OF THE NEW YORK STATE ACADEMY OF FAMILY PHYSICIANS



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New York State Academy of Family Physicians

260 Osborne Road
Albany, New York 12211
www.nysafp.org
Phone: 518-489-8945
800-822-0700
Fax: 518-489-8961

Letters to the Editor, comments or articles can be submitted by mail, fax or email to journaleditor@nysafp.org

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Contact Don McCormick
at 518-783-9368,
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From the Executive Vice-President

By Vito Grasso, MPA, CAE

My first exposure to an NYSAFP educational conference was the 1995 Winter Weekend. I had been hired by the Academy as EVP in September 1994. Sports medicine was the theme of that Winter Weekend as it had been many times before and would be for many years thereafter. I heard various accounts of the genesis of the Winter Weekend. Most included some reference to the winter sports aspects of the village of Lake Placid as a destination in the middle of winter. The area's rich Olympic history and abundant winter sports amenities underscored the consistency of a sports medicine theme for a medical conference in January.

As I recall the planning committee for the Winter Weekend then was comprised primarily of winter sports enthusiasts who were themselves activists in downhill and cross country skiing, ice fishing, snowshoeing, skating and fine dining. I know fine dining is not a winter sport but it certainly seemed to be an essential element of planning the Winter Weekend. Committee meetings always seemed to occur at one of the many outstanding restaurants in Lake Placid. We spent as much time on the wine selection as we did on the program. Much of the program for the 1995 Winter Weekend was presented by orthopedists. Several were Olympic team physicians with strong ties to the Olympic Training Center in Lake Placid. The program included tours and some presentations at the training center.

For several years, my impression of sports medicine was informed primarily by my own association with our Winter Weekend. As that conference has changed over the years so, too, has my understanding of sports medicine and how it relates to family medicine. In subsequent years I noticed that more of the content of the Winter Weekend was being developed and delivered by family physicians. Even in years when sports medicine remained the focus, presentations were increasingly made by family physicians with particular interest and expertise in sports medicine. I think the elevation of

Whether the sub-set of medicine is elder care, OB, pediatrics, sports medicine or something else the family physician will always understand that the patient is more than a specific disease or organ system.

family physicians within the discipline of sports medicine offers a good illustration of the breadth of opportunity afforded by the specialty of family medicine. Because of the broad scope of family medicine family physicians can pursue special interests in areas of particular clinical focus such as sports medicine. Upon making such choices it is not uncommon for family physicians to become thought leaders in their area of clinical focus.

It is not unusual, therefore, that the articles in this issue dedicated to sports medicine are by family physicians. The topics are diverse: ticks, cardiac arrest in marathons, concussions, exercise during pregnancy, high altitude medicine, and others. There is, however, a consistency in approach to this broad spectrum of topics that is characteristic of family medicine. All of our authors take a whole person approach to their, respective, subject matter. It is this aspect of diagnosis and assessment that sets family medicine apart from other specialties and makes it the unique and valuable discipline it is. Whether the sub-set of medicine is elder care, OB, pediatrics, sports medicine or something else the family physician will always understand that the patient is more than a specific disease or organ system.

As I think back upon those Winter Weekend planning committee meetings over dinner, I also recall that it was the orthopedist who agonized over the wine selection. The family docs were always more focused on the entire meal. Not much has changed in that regard.

Vito Grasso, MPA, CAE, is the Executive Vice President of the New York State Academy of Family Physicians.

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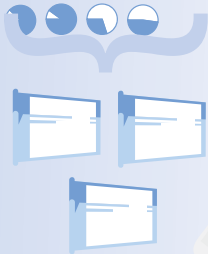
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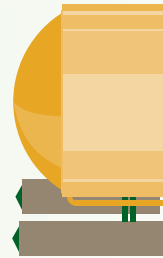
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President's Post

By Raymond L. Ebarb, MD, FAFPP

As a Family Physician for 26 years and being involved with the Academy for over 20 years, I thought I was familiar with all there was to know about family medicine. It didn't take long, in my short tenure as president to discover how much I did not know.

In my mission to bring family medicine departments to the three medical schools in New York City, I was pleasantly surprised to find out that family medicine has numerous allies. I would like to discuss two organizations I feel can put family medicine on the map.

The first organization is the Patient Centered Primary Care Consortium (PCPCC). It is a coalition of more than 1,000 organizations and individuals that works to develop and advance an effective and efficient health care system built on a strong foundation of primary care and the Patient Centered Medical Home. It is comprised of employers, consumer and patient advocacy

groups, patient quality organizations, health plans, labor unions, hospitals, physician groups and other health professional organizations. Many of the employer members are Fortune 500 companies. The founder, Paul Grundy, MD, is an active advocate of family medicine and primary care. The policy makers in our country sit up and take notice when an organization with this type of clout speaks.

The second organization is Primary Care Progress. It is a nonprofit national network of medical providers, health professional trainees, advocates and educators. The vision of the network is to revitalize the primary care workforce pipeline through inter-professional collaboration and strategic local advocacy that promotes primary care and transforms care delivery and training in academic settings. It was established in 2009 as a response to the announcement that Harvard Medical School's Primary Care Division was going to be defunded.

The announcement by Harvard sparked a grassroots campaign to convene the entire primary care community to work with medical school leaders around "a new vision for primary care training". This led to the Center for Primary Care at Harvard as well as the formation of Primary Care Progress.

Please feel free to check out the website of either of these organizations. You may be inspired to contact someone from the organization to get more information. The take away message is that family medicine and primary care are catching fire. We are not alone in our life's work to provide comprehensive quality healthcare and it is not just rhetoric when I say that the time for family medicine has arrived.

Raymond L. Ebarb, MD, FAFPP, is the President of the New York State Academy of Family Physicians for 2013-2014.




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We apologize to Dr. Andrew Symons, Family Physician of the Year, for the misspelling of his name in our last issue.





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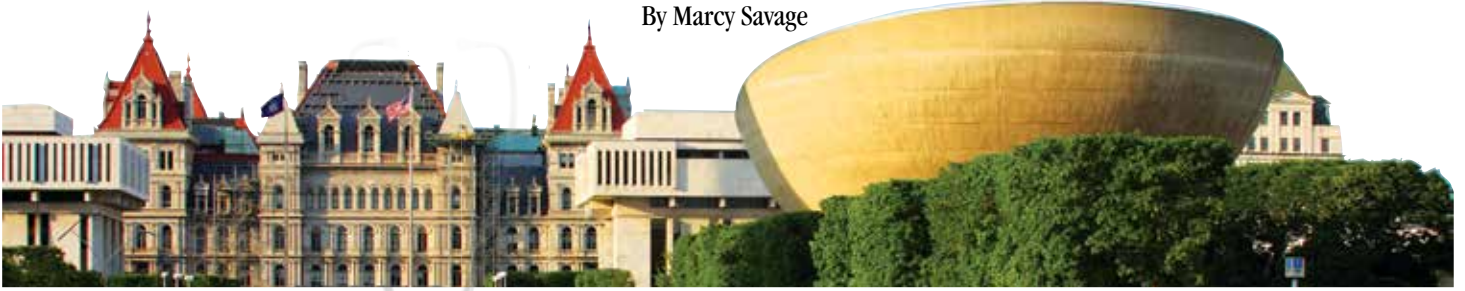


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NEW LAW REQUIRING PRIMARY CARE PHYSICIANS TO OFFER HEPATITIS C TESTING TO BABY BOOMERS TAKES EFFECT JANUARY 1, 2014

By Marcy Savage



On October 23rd, Governor Andrew Cuomo signed into law a measure to require that all individuals born between 1945-1965 be offered a hepatitis C (HCV) screening test or HCV diagnostic test by primary care physicians and other health care providers. The new law applies to hospitals when patients are receiving inpatient or outpatient care, diagnostic and treatment centers and by primary care practitioners in the fields of family medicine, general pediatrics, primary care, internal medicine, primary care obstetrics or primary care gynecology.

The impetus for the law was the 2012 change in the Centers for Disease Control and Prevention (CDC) recommendations calling for the offering of HCV testing to all baby boomers. The measure is supported by a number of patient groups and others citing the need for increased testing and earlier diagnosis of HCV.

An initial version of the bill included emergency departments. The Academy raised concerns on how a patient's physician would know that a test was offered and/or provided in the emergency department setting and how needed follow up care would be provided. As a result, emergency departments were removed and are not subject to this requirement.

Further under the new law, physicians and practitioners are not required to offer such testing if they reasonably believe that the individual:

- is being treated for a life threatening emergency;
- has previously been offered or has been the subject of a test; or
- lacks capacity to consent for a test.

The new law also includes a section on the follow up care to be provided for a positive HCV test. It states that if the individual accepts the offer to be tested and the screening test is reactive, physicians and other practitioners shall either offer follow up care or refer the individual to another provider for care. Such follow up care shall include a HCV diagnostic test.

Finally, the bill requires the New York State Department of Health to evaluate and report on the impact of the legislation to the Governor and the Senate and Assembly Health Committee Chairs by January 1, 2016. The new law takes effect on January 1, 2014 and it sunsets (expires) on January 1, 2020.

While NYSAFP shares the laudable goals of this measure, we engaged in strong advocacy efforts throughout the 2013 legislative session urging that the bill not be enacted as a mandate. In particular, we articulated

concerns to the bill sponsors, Committee Chairs and those in Senate and Assembly leadership that the legislation does not provide for any physician discretion on whether a test makes sense for their specific patients in this age group based on their history and risk factors. Also we educated legislators on the lack of a medical consensus in this area pointing to differing recommendations between the CDC and US Preventative Services Task Force (USPSTF). Note that the USPSTF has subsequently changed its recommendations for HCV testing to mirror that of the CDC.

Despite our many efforts there was a very strong push to advance the legislation. Once the bill was passed by the Legislature, the Academy met with the Governor's office and State Department of Health to express our concerns with the bill and to discuss ways to collaborate with the State to better educate practitioners as well as patients who are at risk for hepatitis C.

As mentioned previously, the Governor signed the bill into law. We are now working with the Department of Health and other government officials who will be developing regulations and working to implement its provisions. We are asking them to ensure that physicians are given adequate notice of the new law, are well-informed on the recommended follow up care for patients who test positive for HCV and that the new law be implemented in a way that is collegial and collaborative rather than rigid and punitive against physicians.

While the Academy is working to educate our members on the new law, we ask for your assistance in getting the word out to your other colleagues in medicine. Also NYSAFP would like to serve as a resource to members who have questions and concerns related to the new law, the hepatitis C virus, recommended follow up care and access to HCV specialists in the State. Please feel free to contact the Academy office at: 518-489-8945 or fp@nysafp.org and we will work to get any questions or concerns addressed by the State or by our expert colleagues in the field.

Finally, we would like to thank Academy members Ephraim Back, MD, President Raymond Ebarb, MD, Immediate Past President Philip Kaplan, MD, President-elect Mark Josefski, MD, Advocacy Chair Marc Price, DO and EVP Vito Grasso for all of their efforts and the time that they devoted to education and advocacy around this legislation over the last several months.

Marcy Savage is the Government Relations Counsel for the NYSAFP from Weingarten, Reid & McNally, LLC, in Albany, NY.

Tick Checks

By William Klepack, MD



There are many important points about how you can prevent lyme disease. For a good summary go to: <http://www.tompkins-co.org/health/summer/lyme-faq.htm>

However, one point that is frequently overlooked is the Total Body Tick Check. It is THE most important step you can take. Here is how you do it:

First, Check your body for ticks. The “deer” tick requires 36 hours or more to transmit the bacteria of lyme disease into your body. This is your “Golden Window of Opportunity” to remove the rascal before it causes harm. Every day that you have been out of the house into your yard, the woods, the park - any place ticks may be - check yourself. If you have a dog or cat that goes out doors and may therefore bring a tick into your home - check yourself every day. The total body check done every day will insure that any tick found has been on your body less than 36 hours and, therefore, has not been there enough time to infect you.

Second, Don't be shy about your total body tick checks. This is no time for modesty. Ticks like to latch on anywhere and we mean anywhere - sometimes quite private anywheres! So, check from head to toe and in all the private crevices you possess. We have found ticks in arm pits, on backs and backsides, on genitalia and on thighs - just to name a few places.

Third, don't rely on seeing them. Feel for them. Use your hand to feel all your skin surface - everywhere. If you feel a little bump the size of a sesame seed - it may be a tick! Get a look at it and if it is a tick remove it right away. Especially use your hand to feel where you cannot see... your back and backside etc. The biggest problem area is your upper back where your hand cannot get to (your acnestis -The part of an animal's skin that it cannot reach to scratch itself). There you will have to make do with mirrors or recruit a buddy.

Fourth, remove them - to see how to do so go to our website for the details: <http://www.tompkins-co.org/health/summer/lyme-faq.htm>. But briefly you use a pair of tweezers to grasp the tick by the head (right where it has latched onto your skin) and gently but firmly exert a pull away from the skin until it lets go. Try not to jerk it off which is more likely to break it. Your goal is to remove all of it.

Fifth, if you have children - you will have to do this for them until they are old enough to be reliable and able to do it for themselves.

Bottom line: if you Check your Body and remove ticks before 36 hours are up you will not have to worry about lyme disease and you won't need preventive treatment. So, start those body checks today!

William Klepack, MD, is a family physician in Dryden, NY and the Medical Director of the Tompkins County Health Department.

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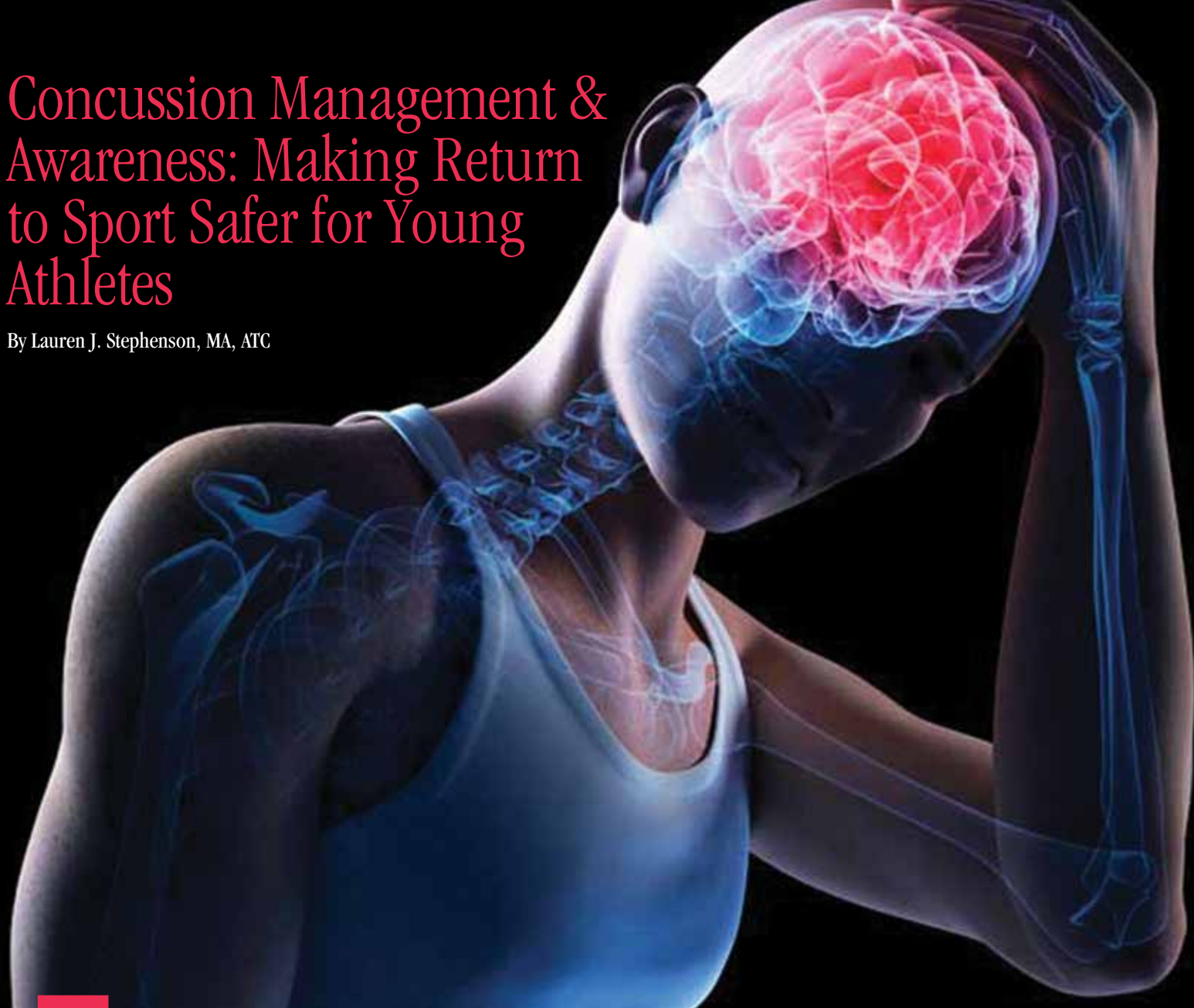
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Concussion Management & Awareness: Making Return to Sport Safer for Young Athletes

By Lauren J. Stephenson, MA, ATC



Concussions in youth sports have become a “hot topic” among health care providers, educators, parents, and coaches over the past few years. While this has been beneficial in assisting new legislation regarding concussions to be passed in many states, it has made the term a common phrase on athletic fields, courts and homes around the country. This word has become so common that without the proper education, many people forget the true definition of what a concussion is: a traumatic brain injury (TBI). This type of injury has numerous implications, which are magnified in children. With the increasing number of children participating in youth sports across the nation it is imperative that continuity of care, between the field and the clinic, is well established to ensure the best possible outcomes for these young athletes.

In a study done by the CDC between 2001–2009, approximately 2.7 million children under the age of 19 were treated annually for sports related injuries, 6.5%, of which were TBIs, a 62% increase.¹ From those that sustained TBIs, 70% were between the ages of 10

and 19, and approximately 92% of them were treated and released. This clearly suggests that there is a need for a strong understanding of best practices and state regulations to develop coordinated healthcare management between the primary health care provider and athletic health care provider to ensure the safe return to sport post-concussion.

According to the Consensus Statement on Concussion in Sport, a concussion is caused by a mechanical force and is defined as a brain injury that has a complex pathophysiological process.² Largely concussions are functional in nature and result in various clinical and cognitive symptoms that differ by patient, making diagnosis to appear abstract in nature as no structural differences are seen on neurological imaging. This lack of quantitative, observable, physical evidence may lead many to believe that this injury can be “brushed off” or “toughed out”, when continuing athletic participation while still suffering from these symptoms can be catastrophic.

CONTINUED NEXT PAGE

One of the most common catastrophic injuries that results from sustaining a concussion is second impact syndrome (SIS). A concussion leads to a metabolic cascade and has the potential to create cerebral edema which can account for a myriad of symptoms. Fortunately in many cases the brain's autoregulatory mechanisms can address the edema, preventing massive swelling and subsequent morbidities.³ One theory of autoregulation post-concussion is that acutely the blood vessels constrict to limit blood flow which causes an increase in lactate and intracellular acidosis.⁴ After the initial injury phase, the brain goes through a period of altered cerebral glucose metabolism.⁵ During this time frame the brain is at a state of increased vulnerability where even a mild insult could result in SIS. If the brain sustains a second impact while still suffering from symptoms of the first concussion it loses its autoregulatory mechanism causing the blood vessels to dilate and the brain tissue become engorged with blood leading to increased intracranial pressure followed by cerebral edema and eventually brain herniation.³ Death occurs rapidly after the second insult, usually in less than five minutes, which in most cases is not sufficient time to transport the athlete to a hospital to receive advanced life support.

A study by Thomas et al.⁶ found that between 1980-2009 17 high school athletes died from SIS. Athletes under the age of 18 are at greater risk for sustaining SIS as it takes their brains longer to recover than adults.⁷ One potential cause of this is that young athletes demonstrate a hyperactive frontal cortex acutely post-concussion, which has been linked to increased recovery time.⁸ It is important to note that recovery times in young athletes are typically longer than adults and vary by case. While a typical collegiate athlete recovers from a concussion in approximately one to two weeks younger athletes usually require at least one month to reach full recovery.^{9,10} Returning a young athlete to sport prior to full recovery is what leads to SIS, and care should be taken by the sports medicine team to ensure elimination of symptoms and that all neurocognitive and balance tests have returned to baseline. This condition is preventable if an adequate amount of time is allowed for the brain to heal after the first concussion.

In 2001 New York State passed The Concussion Management and Awareness Act, specifically Chapter 496 of the Laws of 2011, which instituted a set of rules, regulations, and guidelines related to students who sustain a concussion at school and at any district-sponsored event or related activity. The act provides guidelines for return to school and certain school activities apply to all public school students who have sustained a concussion regardless of where the concussion occurred. Additionally, the law requires that all personnel associated physical activity within each school district, including coaches, physical education teachers, nurses, and certified athletic trainers, complete a New York State Education Department (NYSED) approved course on concussions and concussion management every two years.¹¹

The Concussion Management and Awareness Act states that students who sustained, or are suspected to have sustained, a concussion during athletic activities are to be immediately removed from participation.¹¹ Once a student is suspected of having a concussion and is removed from participation he or she may not return to any athletic activities until he or she has been symptom-free for a minimum of 24 hours and has been evaluated by a licensed physician. The physician must provide written and signed authorization to return to activities to the school district in order for the student athlete to participate in any athletic activity.¹¹ It is recommended that student athletes seek treatment from their primary care physician after sustaining a concussion to receive this clearance, however the school medical director is responsible for the final clearance for return to activities.

It is important for all those associated with the health care of student athletes to foster an environment where it is comfortable for them to report symptoms of a concussion, as self-report is the best way to identify the common symptoms of concussion and to allow the sports medicine team to provide the best course of treatment. While loss of consciousness used to be a defining factor for diagnosis of concussion, this is no longer the case. There are many less severe symptoms that are associated with sustaining a concussion that must be identified and documented from initial insult to full return to participation. Those symptoms include, but are not limited to:

- Amnesia (e.g. decreased or absent memory of events prior to or immediately after the injury, or difficulty retaining new information)
- Confusion or appearing dazed
- Headache or head pressure
- Loss of consciousness
- Balance difficulty or dizziness, or clumsy movements
- Double or blurry vision
- Sensitivity to light and/or sound
- Nausea, vomiting, and/or loss of appetite
- Irritability, sadness or other changes in personality
- Feeling sluggish, foggy, groggy, or lightheaded
- Concentration or focusing problems
- Slowed reaction times, drowsiness
- Fatigue and/or sleep issues (e.g. sleeping more or less than usual)

In youth sports health care providers may not see the patients on a daily basis as is common in college or professional sports. It is imperative to educate the parents of these young athletes on the common signs and symptoms, as well as symptom progression in more severe cases, as they may notice symptoms, such as changes in behavior, more readily than the health care provider. If any symptoms are identified at the time of the initial insult, the athlete must be immediately removed from all activities and referred for further assessment and testing.

The best method for determining readiness for return to participation is administering baseline testing to student athletes prior to their participation in sport. Credentialed district staff, most commonly the certified athletic trainer, may use validated neurocognitive computerized testing concussion assessment tools such as ImpACT (Immediate Post Concussion Assessment & Cognitive Testing), CogSport (also known as Axon), Headminders, and ANAM (Automated Neuropsychological Assessment Metrics); to obtain baseline and post-concussion performance data.¹¹ These tests provide numeric values of neurocognitive function for comparison pre- and post-concussion. Student athletes must obtain a value on these tests greater than or equal to their baseline assessment to return to full activity.

Sideline assessment tools such as SCAT-2 (Sport Concussion Assessment Tool 2), SAC (Standardized Assessment of Concussion), or BESS (Balance Error Scoring System) are more practical to administer at the time of the concussion. Copies of the SCAT-2 or SAC as well as the scoring sheet for the BESS are easily transported in a medical kit, and administration takes only a few minutes. Combining the SCAT-2/SAC with the BESS allows for assessment of neurocognitive function and balance, which can be compared to baseline measurements. A combination of the computer generated tests and sideline assessment tools would be best in determining an athlete's readiness to return to activity. When choosing to use assessment tests and tools, it is important that the individual administering the test be credentialed and have previous experience

in its administration; being knowledgeable about required testing conditions, along with conditions and time intervals required for post-concussion testing.¹¹

It is important to note, that while these assessment tools provide valuable information that can be used to assist in making a decision on return to activity, they are not to serve as a replacement for medical clearance from a physician. That being said, since concussions sustained by youth athletes have the potential to create symptoms that last for one month or longer, the clearing physician must see the patient more than once to make a return to play decision to make sure the athletes are symptom free under varying conditions. These specific conditions are outlined in the graduated return to play protocol put forth in the consensus statement on concussion in sport (Table 1)

In the case when an athletic trainer is available to the student athlete, the supervising physician may provide standing orders for the athletic trainer to administer the return to play protocol and have the student athlete return to the physician at specified times. When athletes engage in this protocol they are only able to advance sequentially if they experience no symptoms at the previous rehabilitation stage for 24 hours. If at any point in the protocol athletes experience recurrence of symptoms they are returned to rehabilitation stage one, no activity, and must progress through each of the stages again. When athletes are able to complete stage five, full-contact practice, without experiencing any concussive symptoms, they may be safely returned to play in a game setting.

Table 1 Graduated return to play protocol

Rehabilitation stage	Functional exercise at each stage of rehabilitation	Objective of each stage
1. No activity	Symptom limited physical and cognitive rest	Recovery
2. Light aerobic exercise	Walking, swimming or stationary cycling keeping intensity <70% maximum permitted heart rate No resistance training	Increase HR
3. Sport-specific exercise	Skating drills in ice hockey, running drills in soccer. No head impact activities	Add movement
4. Non-contact training drills	Progression to more complex training drills, e.g., passing drills in football and ice hockey. May start progressive resistance training	Exercise, coordination and cognitive load
5. Full-contact practice	Following medical clearance participate in normal training activities	Restore confidence and assess functional skills by coaching staff
6. Return to play	Normal game play	

Table 2 Concussion modifiers

Factors	Modifier
Symptoms	Number Duration (>10 days) Severity
Signs	Prolonged loss of consciousness (LOC) (>1 min) Amnesia
Sequelae	Concussive convulsions
Temporal	Frequency – repeated concussions over time Timing – injuries close together in time "Recency" – recent concussion or traumatic brain injury (TBI)
Threshold	Repeated concussions occurring with progressively less impact force or slower recovery after each successive concussion
Age	Child and Adolescent (<18 years old)
Comorbidities and premorbidities	Migraine, depression or other mental health disorders, attention deficit hyperactivity disorder (ADHD), learning disabilities (LD), sleep disorders
Medication	Psychoactive drugs, anticoagulants
Behaviour	Dangerous style of play
Sport	High-risk activity, contact and collision sport, high sporting level

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Maintaining communication between the primary care provider, athletic trainer, parents, coaches, and teachers is key when managing a concussed athlete. When athletes are diagnosed with a concussion it is no longer the accepted terminology to provide grades of severity. Athletes that have sustained a concussion are either symptomatic or asymptomatic. This minimizes the association of recovery time frames with words like “mild”, “moderate”, or “severe”, as each athlete differs in the amount of time it takes for his or her brain to heal, and should not feel pressured to participate based on those distinctions. Parents should be educated about the implications of participation in sport while continuing to suffer from symptoms of the initial concussion, including the potential for SIS. The clearing physician should not provide a time frame for recovery and note that there are some modifiers that could be linked to increased recovery times (Table 2).²

The best method of managing concussions is to develop a comprehensive concussion management protocol that includes the responsibilities of physicians, athletic trainers, parents, coaches, teachers and athletes in the event an athlete sustains a concussion. Copies of baseline neurocognitive and balance test results should be reported to the athlete’s primary care physician so that the physician can administer those sideline assessment tools as part of his or her evaluation of the athlete and make a comparison. A system should be developed for the sharing of information collected on the field to the physician who will be clearing the athlete, and any repeated tests post-concussion should also be shared between the physician and health care provider at school to aid in making a return to play decision. If any symptoms affect the student athlete’s abilities to perform in class, teachers should be notified of restrictions and required accommodations. The CDC has created an initiative called Heads Up Concussion to increase awareness of concussion in youth sport (Figure 1). Information about Heads Up as well as online quizzes for healthcare professionals on prevention, diagnosis, and management of concussions can be found at <http://www.cdc.gov/concussion/headsup/clinicians.html>. By educating all those involved in youth sport and increasing the communication between the clearing physician and those providing health care to the athlete when he or she participates in sport the incidence of SIS will be minimized, creating a safer environment for young athletes to play.

Figure 1



Lauren Stephenson, MA, ATC, joined the Stony Brook University Athletic Training Program faculty in August of 2011 where she is interim Clinical Coordinator for the Athletic Training Program. She graduated from Northeastern University with a BS in Athletic Training and obtained her MA in Exercise & Sport Science at the University of North Carolina at Chapel Hill. While at UNC, she served as an athletic trainer for the Tar Heel’s NCAA 2007 National Champion field hockey team and the track & field team. Stephenson is currently completing her PhD in Educational Research & Evaluation with specialization areas in Athletic Training & Higher Education Administration from Ohio University. While at OU, she was an instructor in the professional & post professional athletic training programs as well as serving as the clinical coordinator for the professional program. In addition, she served as a consulting athletic trainer for the post professional athletic training program and as the athletic trainer for the Athens Marathon, Nelsonville Motorcross, and Varsity Brands Inc. in Ohio. Stephenson became a Certified Athletic Trainer in 2007 and has been a member of the National Athletic Trainer’s Association, Ohio Athletic Trainers Association, and North Carolina Athletic Trainers’ Association. Her research interests include: biomechanics, motor control, and youth injury prevention.

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The Evidence is Clear: Self-directed CPR Training is the Standard for All Organized Athletic Events

By Katherine Barco; Michael W. Dailey, MD and Kimberly A. Kilby, MD, MPH

Abstract

Marathon runners and other endurance sport participants suffer sudden cardiac arrest with low but real incidence. The most immediate bystanders during endurance events are the athletes themselves, who, if minimally trained in compression-only cardiopulmonary resuscitation (CPR), can serve a crucial role in the chain of survival. Research has shown that viewing a brief compression-only CPR training video improves a layperson's compression rate and depth, and may increase the likelihood that they would perform CPR in an emergency. Given the evidence, it is our recommendation that the practice of exposing endurance sport participants to brief compression-only CPR training become the standard of care in pre-event management. As event medical directors, coaches, and primary care physicians of endurance athletes, family medicine physicians are well-situated to ensure implementation of this standard of care.

Introduction

Long distance running as a sport has grown substantially in recent decades, with participation in running events increasing annually in the United States.¹ In 2012, more than 26,000 running events were held in the U.S., hosting over 15.5 million participants.¹ As popularity of the sport has increased, so too has awareness of the health risks inherent to participation. It is known that marathon runners and participants in other endurance sporting events suffer sudden cardiac arrest with low but real incidence.² Often, the most

immediate bystanders during endurance events are the athletes themselves. If marathon participants are minimally trained in compression-only CPR, they can serve a crucial role in the chain of survival.

In a recent study of 10.9 million marathon and half-marathon race participants, Kim et al. found the overall incidence of cardiac arrest was 1 per 184,000 participants. This paper likely understated the incidence of sudden cardiac arrest because the methods failed to capture all potential non-fatal events, yet it remains the most comprehensive study of this topic to date. Of the 59 cardiac arrest victims identified, 40 were full marathoners and 19 were half marathoners, revealing a significantly higher incidence of cardiac arrest among full marathoners. Additionally, 86% of the participants who suffered cardiac arrest were men, and the mean age of victims was 42 +/- 13 years. Structural cardiovascular disease, specifically hypertrophic cardiomyopathy, was the major cause of death among the fatalities.³

Kim's study reported that bystander CPR was initiated in 58% of cardiac arrests in long-distance running events, and that it was one of the strongest predictors of survival.³ This is consistent with other studies of out-of-hospital cardiac arrest (OHCA), where performance rates of bystander CPR have been shown to be low, despite evidence that early CPR may double or even triple survival

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after OHCA.^{4,5} Several well-known races, such as the Boston and Chicago Marathons, have begun encouraging runners to watch a compression-only CPR training video prior to the race. However, this practice has not yet been widely adopted nor reported in the medical literature.

Compression-only CPR

It has been well established that decreased time to compressions in CPR improves outcomes.⁴ In situations of OHCA witnessed by bystanders, Herlitz et al. found “that bystander CPR performed by lay persons was associated with a two-fold increase in the chance of survival” when adjusting for other factors.⁴ Yet the prevalence of bystander CPR performed in cases of OHCA is low. Only 36% of the 29,711 OHCA patients included in Herlitz’s study received bystander CPR, 72% of which was initiated by lay persons.⁴

Various factors serve as obstacles to the initiation of bystander CPR, such as difficulty opening the airway and delivering breaths, concerns about disease transmission during mouth-to-mouth ventilation, anxiety about causing harm, fear of litigation, poor skills retention, and lack of confidence.^{6,7} In an effort to increase the rate of bystander CPR performed in OHCA cases, the American Heart Association (AHA) published a science advisory in 2008 stating that for adults with witnessed collapse of presumed cardiac etiology, compression-only CPR (CPR without ventilations) is comparable in outcome to CPR with ventilations.⁸ The AHA subsequently recommended that rescuers who are untrained or are trained but not proficient should perform compression-only CPR, pushing hard and fast in the middle of a victim’s chest.^{6,8} By simplifying the Adult basic life support (BLS) algorithm for lay persons, the AHA hopes to increase the rate of bystander CPR performed in OHCA and decrease the time to initiation of chest compressions.⁶

Bystanders are generally more willing to perform CPR if it is compression-only.^{8,9} A recent study by Cho et al. evaluated the effect of BLS training on a layperson’s willingness to perform compression-only CPR; after the training, when asked to rate the likelihood of performing traditional CPR in various scenarios, only 55.7% of participants indicated that they would provide standard CPR to a stranger experiencing cardiac arrest.⁹ However, when compression-only CPR was offered as a valid method of CPR, the percentage of respondents willing to provide bystander CPR to a stranger increased to 71.9%.⁹ Thus, informing all athletes of the AHA’s recommendation for compression-only CPR for adult victims of witnessed cardiac arrest and providing compression-only CPR training may provide better availability of care and improved resuscitation rates, ultimately preserving survival.

Current methods of CPR training

The study by Cho et al. reported that training increases laypersons’ confidence and willingness to perform CPR on strangers experiencing cardiac arrest, confirming the value of CPR education.⁹ However, due to various obstacles including time, cost, and aversion to test environments, few individuals access traditional BLS training.¹⁰ To increase the percentage of laypersons knowledgeable in CPR, alternative methods of CPR training are necessary.

Bobrow et al. recently found that laypersons with no prior formal CPR training were able to learn, demonstrate and retain effective compression-only CPR skills following a single viewing of a 60-second training video.¹⁰ According to the group’s research, viewing a brief compression-only CPR training video improves a layperson’s compression rate and depth, and may increase the likelihood that they would perform CPR in an emergency.¹⁰ More than 300 study participants’ abilities to perform CPR were assessed using an adult OHCA scenario. Of the controls who received no

Table 1: Compression-only CPR Training Videos, Demos, and Mobile Apps

Traditional	Hands-Only CPR Video, Go Red for Women <ul style="list-style-type: none"> http://www.youtube.com/watch?v=j1ExB8yCxc8 Watch Hands-Only CPR in Action <ul style="list-style-type: none"> http://www.youtube.com/watch?feature=player_embedded&v=zSgmledxFe8
Humorous/Fun	Staying Alive With Ken Jeong <ul style="list-style-type: none"> http://www.youtube.com/watch?feature=player_embedded&v=n5hP4DIBCEE A Modern Woman Struts Her Stuff <ul style="list-style-type: none"> http://www.youtube.com/watch?feature=player_embedded&v=CBMLZiLcqs0
Interactive	Whose Body Do You Want to Get Your Hands On? <ul style="list-style-type: none"> http://handsonlycpr.org/handson/
Marathon-specific	CCARES (Chicago Cardiac Arrest Resuscitation Education Service) <ul style="list-style-type: none"> http://ccares.northwestern.edu/about_us/ Boston Athletic Association “Hands Only” CPR Instructional Video <ul style="list-style-type: none"> http://www.youtube.com/watch?v=pjY5d7zupVY&list=UUUVQ-jDjDQR-rmk1mbldQgYQ&index=1&feature=plcp
Mobile Apps	Hands-only CPR <ul style="list-style-type: none"> Available free for iTunes, Android, Palm

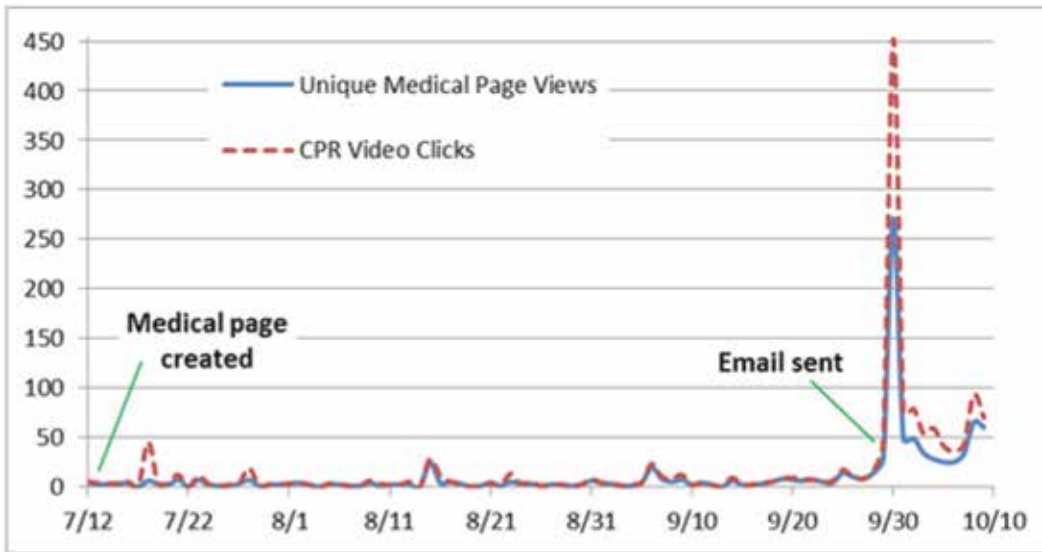


Figure 1: Unique medical page views and CPR video clicks preceding the 2011 Mohawk Hudson River Marathon and Half-Marathon.

Note: A unique page view counts all visits to the page during a user's single session as one view.

training intervention, nearly one-quarter made no attempt to perform CPR; in comparison, 95.8% of subjects who viewed a 60-second AHA video without skills practice and were assessed two months later attempted CPR.¹⁰ In addition, the trained participants had better compression rate and depth than the controls who attempted CPR with no prior training.¹⁰ Furthermore, the brevity of the training and ease of access facilitates repeated exposure, enabling viewers to review the material and practice virtual CPR until they feel comfortable with the concept and the technique.¹⁰

Video and interactive training resources

The compression-only training videos and applications available through the AHA website are novel in their approach to CPR training, providing laypersons with approachable, interactive, and entertaining options for learning CPR. The video "Staying Alive with Ken Jeong," featuring the popular comedian, actor, and physician, and the interactive online application "Whose Body Do You Want to Get Your Hands On," which invites participants to select which visually appealing body to practice CPR on, are two such examples.¹¹ Table 1 provides a more comprehensive selection of easily accessed training videos.

These resources, and specifically the videos, are effective training tools because of their format and use of humor. According to an eHealth Data Brief on Online Videos produced by the Office of the Associate Director for Communication at the Centers for Disease Control and Prevention, online video watching has grown across all age groups, and it is predicted that, by 2014, 77% of internet users will use online videos each month.¹² Furthermore, 63% and 40% of internet users share funny videos and educational videos, respectively, indicating that informative videos that include humor have a higher probability of reaching a large audience.¹² Additionally, researchers of entertainment-education, defined as entertainment programs designed to exert a pro-social effect on viewers by providing information or promoting healthy behaviors, have found

that humor increases attention to a message without harming comprehension.¹³ For example, research on humor in advertising has shown that viewers pay more attention to and are better able to recall advertising claims when they perceive more humor.¹³ Thus, it is worth investing in the development and promotion of humorous CPR training resources, especially videos, as a means of improving layperson knowledge of compression-only CPR.

CPR training in endurance sport pre-event management: current and future models

Several well-known races with large numbers of participants, including the Boston and Chicago Marathons, have begun encouraging runners to watch a compression-only CPR training video prior to the race. The Boston Athletic Association (BAA) website, for example, includes a page devoted to CPR training, including a brief "hands-only" CPR instructional video and information regarding cardiac arrest. Additionally, in 2012, the BAA began providing in-person compression-only CPR demonstrations for runners, family members, and spectators.¹⁴

We evaluated whether participants in the 2011 Mohawk Hudson River Marathon and Half-Marathon in Albany, New York, were willing to learn compression-only CPR by watching a brief video, and if so, whether email was an effective method to increase participation in the training. In the 80 days between posting a message encouraging participants to view a CPR training video on the Medical Information page on the marathon website and email distribution to registered athletes, there were 341 unique medical page views and 489 CPR video clicks. Ten days before the race, an email was sent to all registered runners encouraging them to view a brief CPR training video. Following the email there were 638 unique page views and 1001 clicks on the CPR video (Figure 1). Our analysis demonstrated that marathon athletes were willing to watch a brief video about compression-only CPR. Furthermore, the obvious spike in traffic to

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the medical page and CPR video associated with the email confirmed that email notification was an effective method of increasing awareness of the training opportunity (K. Kilby & M. Dailey, unpublished data, January 2012).

Despite the incidence of sudden cardiac arrest among marathon runners and the critical role that bystander CPR plays in the chain of survival, the practice of exposing event participants to compression-only CPR training is not yet the standard of care in pre-event management. However, our own study suggests that race participants are amenable to viewing a training video prior to race day and that email is an effective means of disseminating information regarding the training opportunity. Further, the intervention is simple, low cost, low risk, and easily implemented. Given the evidence, it is our recommendation that the practice of exposing endurance sport participants to a brief compression-only CPR training become the standard of care in pre-event management. Event medical directors, coaches, and primary care physicians of endurance athletes are well-situated to promote this standard of care.

In addition to incorporating compression-only CPR training into pre-event management of running events, consideration should be given to extending this as the standard of care in other endurance events as well as to developing programs to train event spectators and the general public. The Chicago Cardiac-Arrest Resuscitation Education Service (CCARES), formed by Chicago Marathon medical director and emergency medicine physician George Chiampas, is an organization striving to increase cardiac arrest survival rates by raising awareness and educating individuals across Illinois to perform bystander CPR and use automated external defibrillators (AEDs).¹⁵ Besides training leaders of local running organizations, CCARES has developed and used CPR training videos and online modules to train Chicago Police Department officers, incoming Northwestern University undergraduates, and employees and students in Chicago public schools.¹⁶

Current efforts to increase public awareness of sudden cardiac arrest and to train individuals to perform compression-only CPR, such as those made by the BAA and CCARES, are commendable. Suggestions for future models aimed at educating spectators of endurance sporting events include requesting runners to provide email addresses of friends and family who will attend the event so that compression-only CPR information and training may be disseminated electronically prior to race day, open forums and in-person training opportunities at sports expos, packet pickup, and on race-day, and large-screen showings of a brief compression-only CPR video along the course before and during the event to raise awareness. Further, family medicine physicians working in schools or with sports teams can contribute to the effort of educating the general public by promoting compression-only CPR training for all athletes on sports teams as well as all students and teachers in their school districts.

Conclusion

Exposing marathon participants to a brief compression-only CPR training video has already been implemented in several prominent marathons around the United States, but the practice has not yet become wide-spread nor has been published. Considering the known risk of sudden cardiac arrest during marathons and the important role that bystander compression-only CPR can play in the chain of survival, we believe this should become the standard of care in pre-race management of long distance running events. This would have great potential benefit, and is a simple, low cost, low risk, and very easily implemented intervention. Further, consideration should be given to extending this as the standard of care in other endurance sporting events and to promoting compression-only CPR training programs for event spectators and the general public.

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Katherine Barco is a second year medical student at Albany Medical College. She earned a B.A. in International Development Studies from UCLA and completed her EMT certification at the UCLA Center for Prehospital Care, after which she worked for two years as an Emergency Trauma Technician at the Ronald Reagan UCLA Medical Center Emergency Department. She has volunteered at the finish-line medical tent

at the Boston and Mohawk Hudson River marathons. When not studying, Katherine enjoys long-distance running and traveling. **Kimberly A. Kilby, MD, MPH**, is the Assistant Dean for Undergraduate Medical Education at Albany Medical College in Albany, NY, where she oversees the clinical portions of the medical school curriculum. She is a graduate of Albany Medical College and obtained her MPH degree from the University at Albany School of Public Health, and is Board Certified in both Family Medicine and Preventive Medicine. Dr. Kilby completed her family medicine residency at the University of Vermont and subsequently completed the New York State Preventive Medicine Residency program. She works clinically as a nutritionist for Albany Medical Center's Bariatrics and Nutrition Group. When not at work, she is active in endurance athletic events, including ironman and half-ironman distance triatlons and marathons. She is a medical director for the Mohawk Hudson River Marathon. **Michael W. Dailey, MD, FACEP**, is an Associate Professor of Emergency Medicine at the Albany Medical College, in Albany New York. He completed residency in Emergency Medicine at the University of Pittsburgh and received his MD from the Albert Einstein College of Medicine. He has been involved in EMS for over 30 years, with provider experience in volunteer suburban EMS, rural volunteer fire service, urban municipal EMS, and helicopter EMS. Currently, Michael is a member of the State Medical and Trauma Advisory Committees as well as the State Medical Standards Committee. He is the EMS Medical Director for the Hudson Mohawk EMS Region, the six counties surrounding the State Capital. He is a recreational runner and medical director for the Mohawk Hudson River Marathon

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IN THE SPOTLIGHT



Congratulations to NYSAFP member **Jason Matuszak, MD**, on his appointment to the AAFP Commission on Health of the Public & Science. Dr. Matuszak has demonstrated considerable

leadership in his service to the Academy as a member and chairman of the Winter Weekend planning committee and the NYSAFP Education Commission, as a delegate to the NYSAFP Congress of Delegates and as a member of the NYSAFP board of directors. We are grateful for his service to the NY chapter and we look forward to his contributions to the mission of the Academy at the national level as a member of the Commission on Health of the Public & Science.

Physical Activity in Pregnancy: What Should the Family Physician Recommend?

By Dana Schonberg, MD, MPH and Rebecca Williams, MD, MHPE, FAAFP

Should pregnant women exercise? If so, what type of exercise can they perform? The family physician who takes care of pregnant women will be expected to provide counseling on physical activity during pregnancy. Although the American Congress of Obstetricians and Gynecologists (ACOG) once recommended strict restrictions on activity during pregnancy, current research shows that most exercise in pregnancy is safe and has many benefits. ACOG now recommends that in the absence of medical or obstetrical contraindications, pregnant women should be encouraged to take part in 30 minutes or more of moderate daily activity.¹ This mirrors the recommendations of the CDC and American College of Sports Medicine for exercise in non-pregnant individuals. Most women decrease their physical activity as pregnancy progresses and feel that exercise is harmful to the pregnancy, a belief mostly shaped by social influences.² Pregnant women are more likely to exercise if advised to do so by their doctor. However, few doctors counsel women on physical activity in pregnancy. Furthermore, the majority of OB/GYN providers were not familiar with the latest ACOG recommendations.^{3,4} This brief review of the risks, benefits, and special considerations for physical activity in pregnancy will allow the family physician to counsel pregnant patients about physical activity with confidence.

Physiological Changes in Pregnancy

Normal physiologic changes that occur during pregnancy can affect a women's ability to exercise. Cardiac output increases with an increased resting pulse rate and decreased systemic vascular resistance. The growing uterus can obstruct venous return and decrease cardiac output, making it important to avoid certain exercise positions which can exacerbate this physiologic change. Women have greater baseline oxygen requirements and an increased work of breathing due to the larger uterus and this can be exacerbated by strenuous exercise. Pregnancy requires an increase in carbohydrate load and this is especially important for women who are active. These metabolic and hemodynamic changes require consideration in the exercise prescription for pregnant women.

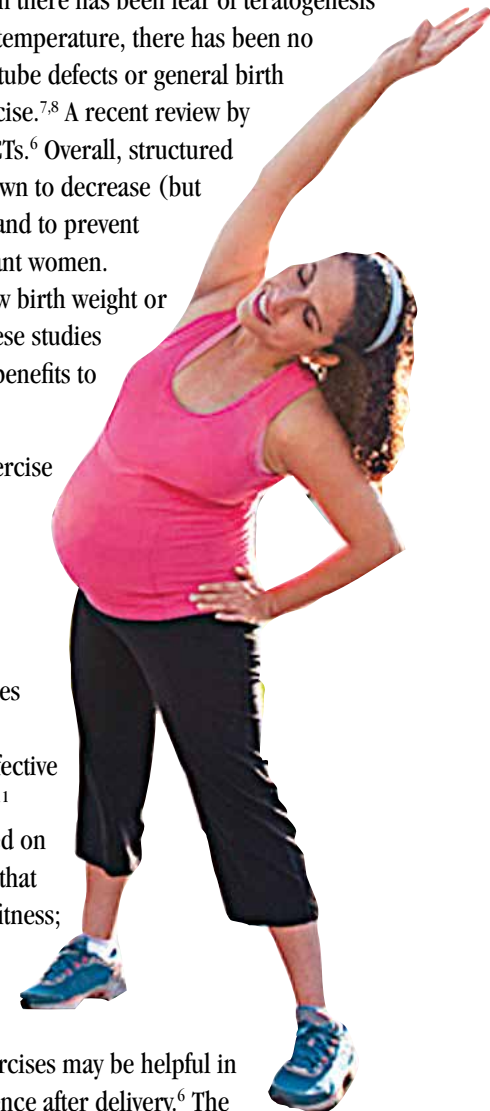
Research

Research in pregnancy is limited by concerns about risks and benefits of the study to the fetus, as well as to the mother. Some information is available through epidemiological sources and pregnancy registries. While randomized controlled trials (RCTs) of exercise for pregnant patients exist, these studies tend to be small. For this reason, meta-analyses such as those found in the Cochrane database are often relied upon for evidence-based care.

One study showed that vigorous exercise in early pregnancy was associated with miscarriage. 92,000 patients in the Danish National Birth Cohort of 100,000 women were interviewed following childbirth or spontaneous abortion with respect to their exercise routines. Between 11 and 14 weeks gestation, as time spent exercising increased so did the number of miscarriages. Highest rates of miscarriage were seen for women exercising more than 419 minutes per week (roughly more than seven hours per week) compared with those who did not exercise. In particular, high impact exercise was associated with an increased miscarriage risk. While vigorous exercise in early pregnancy was not proven as a cause of miscarriage in this study, a clear correlation was found.⁵

Investigators looking at exercise in pregnancy study both fetal and maternal outcomes. Although there has been fear of teratogenesis due to increased core body temperature, there has been no reported increase in neural tube defects or general birth defects associated with exercise.^{7,8} A recent review by Nascimento examined 19 RCTs.⁶ Overall, structured exercise programs were shown to decrease (but not prevent) low back pain and to prevent excess weight gain in pregnant women. Exercise did not increase low birth weight or preterm deliveries. Thus, these studies generally establish variable benefits to exercise in pregnancy.

Research on the effect of exercise as an adjuvant treatment for gestational diabetes mellitus (GDM) was equivocal. Cochrane reviews found no significant difference with respect to treatment outcomes or prevention of GDM.^{9,10} In addition exercise was not effective in preventing preeclampsia.¹¹ One Cochrane review focused on aerobic exercise concluded that exercise improves physical fitness; however there is insufficient evidence to infer important risks or benefits to fetus or mother.¹² Pelvic floor exercises may be helpful in preventing urinary incontinence after delivery.⁶ The



mental health aspects of exercise have been studied, with exercise showing positive effects on depressive symptoms, quality of life measures and sense of overall well-being⁶ Thus, the literature on exercise in pregnancy suggests that moderate exercise is helpful but larger well-designed studies, reflective of regular exercise routines are needed to be able to recommend effective interventions.

Contraindications

All pregnant women should undergo consultation with a physician before starting an exercise regimen. Maternal medical contraindications to exercise include hemodynamically significant heart disease and restrictive lung disease. Obstetrical conditions contraindicating exercise include pre-eclampsia and pregnancy induced hypertension. Conditions which predispose the patient to premature delivery, such as incompetent cervix or other risk for preterm labor, twin pregnancy, persistent bleeding in the 2nd or 3rd trimester or placenta previa after 26 weeks are also contraindications.^{1,13}

Exercise Prescriptions

Exercise prescriptions for pregnant women begin with the ACOG guideline of thirty minutes or more of daily exercise. Aerobic exercise with walking, dancing, swimming, biking and stair climbing are recommended. Women who are recreational athletes with a regular fitness plan can continue usual activities with few exceptions, up to one hour per day. The American Academy of Sports Medicine provides detailed recommendations (Table 1). Women should be instructed to drink lots of fluid, wear loose fitting clothing and remain in cool environments when exercising.^{1,14} Elite athletes who continue their training regimens in pregnancy should be carefully monitored. In light of data from the Danish Birth Cohort above, less intense activity or shorter duration can be suggested for the first trimester of pregnancy.

Some exercises are not advisable during pregnancy. A pregnant woman will experience changes in balance and should therefore avoid exercises which rely on balance. Pregnant patients should avoid exercises which involve motionless standing as well as the supine position, as both can lead to circulatory compromise. Pregnant women should not partake in activities which could involve trauma to the abdomen such as soccer, ice hockey, basketball or other contact sports. Pregnant women should also avoid activities with a risk for falling such as gymnastics. In addition women should not partake in scuba diving secondary to decompression sickness and should be cautious exercising at altitudes above 6000 feet.¹

Pregnant women should be aware of the warning signs for which to stop exercising and seek medical evaluation (Table 2). These include vaginal bleeding, dyspnea prior to exertion, dizziness, headache, chest pain, muscle weakness, calf pain or swelling, preterm labor, decreased fetal movement or loss of fluid.¹

In conclusion, exercise is an important part of maintaining physical fitness and mental well being. Exercise has been shown to improve the physical discomforts of pregnancy. Although more research is needed to fully determine the risks and benefits of exercise in pregnancy, family physicians should feel comfortable advising women to do at least 30 minutes of daily aerobic activity as recommended in the latest 2002 ACOG guidelines.

Table 1

American Academy of Sports Medicine Recommendations

Recommended weight bearing activities
Walking
Jogging
Low impact aerobic programs
Recommended non-weight bearing exercises
Swimming
Stationary cycling
Activities to avoid:
Heavy weightlifting
Bicycle riding
Scuba diving
Contact sports, such as, soccer & basketball
High altitude exercise for non-acclimatized women

Table 2

Reasons to stop exercising and receive medical evaluation

Vaginal bleeding
Membrane rupture
Persistent pain or fatigue
Dyspnea prior to exertion
Dizziness
Chest pain
Headache
Calf pain or swelling
Decreased fetal movement
Regular contractions lasting more than 30 minutes after exercise

(From ACSM and ACOG 2002)

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Patient Education Materials

AAFP

Handout & Webpage: <http://familydoctor.org/familydoctor/en/pregnancy-newborns/your-body/exercise-during-pregnancy-what-you-can-do-for-a-healthy-pregnancy.html>

ACOG

Handout: http://m.acog.org/For_Patients/Patient_Education_FAQs_List

March of Dimes

Webpage: <http://www.marchofdimes.com/pregnancy/exercise-during-pregnancy.aspx>

Handout: <https://www.marchofdimes.com/catalog/>

Dana Schonberg, MD, MPH is Assistant Faculty at the Department of Family and Social Medicine at Montefiore Medical Center. **Rebecca Williams, MD, MHPE, FAAFP** is Director of Maternity Services for the Department of Family and Social Medicine at Montefiore Medical Center.

NEW PHYSICIANS' COLUMN



A PRIMER ON CONFLICT RESOLUTION

By KrisEmily McCrory, MD

As a medical student and resident I learned a great deal about the science of medicine. I learned how to relate to my patients and their families. Not much time, however, was spent on how to relate to my colleagues. I suppose it was assumed that we would all just “get along”. As I prepared to write this article I explored the literature and was surprised to find little written on conflict resolution in medical settings. Are we somehow immune to conflict and therefore don’t need the information?

In my position as a new attending I was faced with conflict often enough that I wished for guidance. Examples include conflict over call schedules with more senior doctors, disagreements over patient care issues with experienced nurses and even

interpersonal conflict with fellow attendings. I had taken a position in a practice where I had worked as a resident and was faced with the challenge of having to manage conflict with those who just a few short months prior had been in a position of authority over me. Ultimately neither medical school nor residency adequately prepared me for conflict resolution with other doctors.

Conflict is virtually impossible to avoid. In our daily lives in the office we are going to encounter power struggles, opposing positions, egos, and even the occasional “bad day” that leads us to butting heads with those we work with. Handling conflict in an appropriate and constructive way helps engender better offices, better doctors and better patient care.

Preventing conflict, though not always possible, should be the first goal. By defining acceptable behavior, identifying and addressing tensions, learning to “pick our battles” and avoiding conflict for the sake of conflict we can deter some conflict from entering our practices. Most conflicts ultimately stem from two main roots: poor communication and the inability to control one’s emotions. We end up with poor information or misinformation coupled with anger and hurt feelings. The first way to tackle conflict is to address these roots.

Communication consists of listening and speaking. Good listening includes paying attention, being emotionally controlled, showing concern for the others’ feelings, asking for clarification when something is

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THE EVOLVING EMR

By Philip Kaplan, MD, FAAFP

We are moving away from the paper medical record into individual Electronic Medical Records (EMRs), followed by networking these EMRs for coordinating clinical care and for quality assessment. While there are innovations for optimizing EMR usage suggested below, our current use of EMR has not sufficiently matured, nor have civil liberties been sufficiently explored, I submit, for such networking to be encouraged or mandated. Sharing of diluted, inaccurate or fraudulent data would not improve care. While practicing family medicine in a small group, I have reviewed the output of many EMRs, accepting transfers into our practice, reading communications from ERs and consultants, and while reviewing records as a part time medical coordinator at the Office of Professional Medical Conduct (OPMC). There indeed are a few high functioning physicians and EMRs whose records emulate the paper record, portraying clinical information gathering and problem solving through the classic ritual of chief complaint (CC), history of present illness (HPI), review of systems (ROS), personal and social history (PH/SH), physical exam (PE), followed by assessment and plans.

A medical record had been a historical novel, a narrative formatted to convince a colleague of the propriety of our care. The EMR has additional purposes: logging the time spent by each staff member, liability defense, billing bullets. The resulting compiled note obfuscates clinical thinking, diluting and submersing clinical logic in a sea of irrelevant trivia. Templates have displaced narrative. Templates neither tell the story, portray the logic, nor convince

the reader of the validity of planned action. And the resulting staccato syntax defies readability.

Templates, when substituting for typing a narrative, encourage an easy checkmark, and discourage an accurate complete description. Checkmarks denote a review of systems and examination, some items of which were never asked or examined. The threshold for signing an untrue record seems to be lowered when one clicks an untrue statement rather than when writing an untrue statement. Thus I received three neurosurgical notes on separate patients describing a normal examination when clearly the patients were severely afflicted. It was easier to click a normal exam than to navigate the software to articulate an abnormal exam. And our manager reviewed a note from her specialty visit and exclaimed such ROS questions were never asked. We received a gynecology note indicating the 65 year old woman was counseled on contraception, and another describing the uterus of the post hysterectomy patient.

Cutting and pasting allows one to portray as current work that which occurred at a prior visit. It is often not appropriate to reexamine the family history or social history of a long term patient who visits for an acute problem, but many EMR notes imply such review has taken place at every visit.

EMRs are evolving, and planners might expect the market place to encourage a Darwinian survival of the most fit. But the market has artificial constraints which pervert this evolution. I don't own my EMR, it owns me. Because the gathered demographics and clinical data thus far

entered in our minor league product cannot be transferred to a next generation major league product except by manual data entry at great expense and prone to massive error, our practice is wedded to our original choice. We who made an imperfect initial purchase are not free agents. We are at the mercy of the programmers of our first product. And bankrupting small practices will aggravate the shortage of primary care physicians.

Standards could be developed that require true interoperability, as we have accepted 8.5" x 11" paper and black ink, bearing the patient ID on every page. Only when my demographics and medical record can be plugged into our next product will there be a functioning marketplace for EMRs. There are available solutions allowing the EMR to serve many parallel purposes while preserving the original function and readability of a paper medical record. One colleague dictates narrative for CC and HPI, using templates only for elements of ROS and PE, and his EMR locates the entry point for such dictation. Belden and Koopman¹ proposed a six layer EMR allowing the physician to view and generate only that which is clinically relevant. Cimino² proposed that "impressions and plans be captured within the EHR as explicit data elements rather than being buried in the narrative text." Jha³ observed the "EHR remains a tool with vast potential but a limited set of current capabilities," and proposes natural language processing as the tool for tapping the inherent capacity of the technology. Such [proposed] standards

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COMMENTARY, CONTINUED

[and innovations] have great potential for hastening the day when we have truly functional interconnected EMRs which serve physicians rather than impeding us.

New York State is an “opt in” state. Patients must give permission to allow their data to be transmitted. But youth younger than age 18 are entitled to privacy for care of sexually transmitted infections and contraception, while they are not able to sign a contract for data transmission. We are conflicted about the balance between privacy and efficiency. If patients were to carry a flashdrive representing their entire data set, such conflicts between efficiency and privacy could be resolved by giving patients physical custody of their data. It is premature to mandate data exchange. We must first have truly functional individual EMRs which serve us and our patients. Then we must become an “opt out” state; our legislature must define participation as a duty of patients before it can become a mandate for physicians.

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Philip Kaplan, MD, is the immediate Past President of the NYSAFP. Dr. Kaplan has been in a small group private practice for 40 years, and is Clinical Professor at SUNY Upstate Medical University in Syracuse, NY.

NEW PHYSICIANS' COLUMN, CONTINUED

unclear, and not rushing or interrupting the speaker. The speaker should be both honest and direct, avoiding generalizations and focusing on specific examples. It is important to use descriptive words. Avoid judgmental language. Pay attention to non-verbal signals that are incongruent with the verbal message. Both parties should focus on those things that can be changed.²

Controlling emotions is easier for some than for others. Resist that first negative reaction that often encourages blame and judgment. Give a cool down period and avoid engaging in conflict management at a moment when feelings are escalated.

Individual response to conflict varies. Lynda Flanagan describes the Flight or Fight Response that many engage in when conflict arises.³ Those who pursue a “flight” response are passive and often underreact to a situation with indirect or vague comments and sometimes just outright avoidance. On the other side are the “fight” responders who overreact with judgmental statements, labels, and sarcasm. Neither of these reactions addresses or resolves the conflict. A more moderate approach is the assertive individual. Assertive responders are able to address the situation in a direct matter with honest expression of their needs and desires while accepting responsibility for their own actions. Even in a situation where one party may be wrong, assertive responders are gentle, permitting “saving of face.” They look toward a collaborative, mutual solution.

How does collaboration differ from compromise? Collaboration is looking for a solution in the best interest of all parties concerned. It seeks to maintain the goals of the overall organization as well as relationship stability. Compromise, on the other hand, seeks to avoid conflict by merely splitting the difference. This may not be in anyone's best interest. Paraphrasing

Ellen Belzer, MPA: *we should avoid the urge to just meet in the middle. If one group wants A while the other wants Z, by compromising we often end up at M, which likely doesn't meet anyone's needs and leaves every one dissatisfied.*⁴

Resolving conflict through collaboration is not always quick, but the end results are worth the time invested. Set up a separate time for everyone involved to come together for discussion of the issue from each perspective. Written information including a list of discussion topics, company goals, and expectations can help the group communicate effectively. Remind all participants that the meeting is not a time to vent, discourage gossip, and keep the proceedings confidential. The session, or sessions if necessary, should be a time to work together exploring, identifying, and evaluating options in relation to what each person needs or wants.

Conflict resolution requires those qualities that drew us into medicine to begin with: compassion, empathy, and service above self. Above all one should look for the teaching or learning opportunity and potential for growth.

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KrisEmily McCrory, MD, New Physician Delegate, graduated from Albany Medical College and completed her family medicine residency at Albany Med. She has worked for Community Care Physicians and has been on the faculty at Albany Medical Center Family Medicine Residency for one year. She is now on the faculty at Ellis Family Medicine Residency in Schenectady, NY.

Cold Injury

By Michael Kernan, MD and Quoc-Phong Tran, MD



Cold injuries occur in a variety of outdoor activities and may endanger anyone from the most active athlete to the most sedentary sports fan. Most of these injuries are due to the inability to protect oneself from the cold environment and injury severity depends on the outdoor temperature, the body's exposure time, and the degree to which the body is exposed. Cold injuries are divided into non-freezing injuries and freezing injuries (frostbite) and both are potentially dangerous outcomes in most outdoor sports, especially those taking place in a cold environment. Many of these activities, including cross-country skiing, mountaineering, and other winter sports, involve prolonged exposure to a cold environment while at high levels of exertion, increasing the risk of cold injury to participants.¹

Non-freezing cold injuries include chilblains (pernio), trench foot, and immersion foot.^{2,3} Chilblains is a localized cold injury which presents as inflammatory, reddish lesions typically distributed in the hands, feet, legs, and thighs. The mechanism is thought to be peripheral vasoconstriction due to prolonged cold exposure, with hypoxemia causing tissue ischemia and edema. Common symptoms can include blistering, pain, and pruritus. Prevention is key as treatment is typically supportive.²

Trench foot and immersion foot result in tissue injuries when cold and moist feet undergo prolonged exposure to temperatures between 32-59°F (0-15°C).² Trench foot occurs after wearing cold and wet footwear whereas immersion foot describes injury caused by cold water immersion. After removal from exposure, healing can be divided into three stages. The initial stage of healing is prehyperemic where there is loss of sensation and pulses, and feet become swollen and discolored. Next, hyperemia occurs where pulses return to normal or are exaggerated and the feet are hot, blistered, and painful. The last stage is that of recovery, where tissue and pulses return to normal.⁴ Warming the injured feet slowly and exposing them to air will usually resolve symptoms. However, cold sensitivity may persist for months and become chronic. Again, prevention is most important and management is supportive, although advanced cases may require wound care.^{2,4}

Frostbite is an ischemic injury which occurs after the direct freezing of tissue and involves ice crystal formation and vascular stasis.⁵ When enough heat is lost in exposed tissue, ice crystals form that disrupt cell walls and change cellular osmolarity. The subsequent shift of intracellular water out of the cells results in a toxic

hyperosmolar state. Vasoconstriction and blood viscosity secondary to hypercoagulability contribute to further ischemic injury, as blood supply to tissue is decreased.

Frostbite occurs when temperatures are below 32°F (0°C) and commonly affects exposed areas as well as the distal extremities. Risk factors include low ambient temperatures, prolonged exposure, medical conditions such as diabetes, high altitude, and alcohol consumption.^{2,3,5} While historically frostbite has been stratified into tiers (first degree through fourth), a more clinically useful definition divides frostbite into superficial or deep categories. As the degrees of frostbite are clinically similar early in the disease course, classification is generally applied after rewarming and thawing are complete.^{2,5}

In superficial frostbite, tissue freezing remains localized to skin and subcutaneous tissue.⁵ When the affected area is frozen, the skin appears waxy and there is no pain or sensation. With rewarming, pain begins and gradually increases. Hyperemia, edema, and blistering may occur, although loss of tissue is less frequent.^{2,5}

Deep frostbite is characterized by freezing below the subcutaneous tissue layer with resultant tissue necrosis. Initially, symptoms may be mild and painless, but thawing is not accompanied by the return of sensation. After thawing, the extremity appears black or blue and firm in nature with total anesthesia and gangrene as potential sequelae.^{2,5}

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Initial management of frostbite involves removal of the patient from the inclement environment followed by rapid rewarming of the affected extremities. This should occur after hypothermia and other medical emergencies have been addressed.³ Once thawing begins, refreezing must be prevented due to significant morbidity.^{2,5} Care must be taken to avoid disrupting blisters when padding and splinting the affected extremity in the field. In an emergency department or other proper medical facility, rapid rewarming may be started with immersion in water with temperatures in the 104-108°F (40-42°C) range for 30-45 minutes.⁵ Adequate analgesia is essential as intense pain often accompanies thawing and in severe cases may require hospitalization.

Secondary management involves antiseptic baths once or twice daily. Advanced wound care techniques including hyperbaric oxygen may be beneficial.⁵ There is some evidence supporting the use of ibuprofen and aspirin in the acute treatment of frostbite due to their anti-platelet and anti-inflammatory properties. The Wilderness Medical Society recommends ibuprofen initiation in the field if available.⁶ More recent studies have looked into advanced imaging and tissue plasminogen activator (tPA) use for more severe cases, although current recommendations do not support tPA in the field.³

While there are many treatment modalities for cold injuries, the best treatment available is still prevention. The American Wilderness Medical Society has guidelines for the prevention of cold injury.⁶ Some important recommendations include weather anticipation and awareness, thorough trip planning, and usage of proper clothing.^{2,3,6} Layering allows for insulation modifications depending on weather conditions. Wool and polypropylene materials are preferable to cotton as they remain effective when wet and take less time to dry.³ Breathable foul weather apparel, such as Gore-Tex, reduces the risk of perspiration leading to wet insulation layers. Toes and hands should be adequately protected, and head gear should be used to

minimize heat loss and protect the ears. Mittens should be worn instead of gloves when temperatures are extreme. External heat sources such as pocket warmers may be used if necessary. Most importantly, when severe cold conditions present risks to athletes or outdoor enthusiasts, it may be prudent to cancel a trip or event to avoid cold injury.

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Michael Kernan, MD, is Associate Professor in the Department of Family Medicine at Upstate Medical University in Syracuse, NY. He is also Assistant Team Physician at Syracuse University, a member of the American Academy of Family Medicine and the American College of Sports Medicine. **Quoc-Phong Tran, MD**, is a resident at St. Joseph's Hospital Health Center Family Medicine Residency Program in Syracuse, NY. Dr. Tran graduated from Saint Louis University School of Medicine in St. Louis, MO, after completing undergraduate work at the University of California, Irvine.

CALL FOR AUTHORS FOR NYSAFP JOURNAL:

Family Doctor, a Journal of the New York State Academy of Family Physicians is soliciting articles for our next issues.

Our Spring issue in April will feature the topic of the Adult Annual Physical. Potential facets include:

- The evidence for various components. (There is a lot of literature on screening tests; of more interest perhaps would be evidence for specific history points, parts of the exam, counseling.)
- Tips and perspective on how to cover and prioritize all the things we are expected to get into the visit and
- Perspectives “pro and con” of whether an “annual physical” is worthwhile.

Deadline for articles for the Spring issue will be in mid-March. Please contact the editor at journaleditor@nysafp.org with possible topics before submitting your articles.

CME & POST-TEST

HIGH ALTITUDE MEDICINE

BY RAYMOND L. EBARB, MD, FAAFP

As exhilarating as a mountain climb can be, the climber will encounter many dangers. One of the most insidious dangers is changes in physiology that will incapacitate climbers and thrust them into a precarious situation. The wary climber can take measures to prevent and anticipate such conditions. Early warning symptoms must be recognized and proper measures taken immediately to prevent progression.

High-altitude illness presents as three conditions: Acute Mountain Sickness (AMS), High-Altitude Pulmonary Edema (HAPE) and High-Altitude Cerebral Edema (HACE). Symptoms associated with these conditions include: headache, dizziness, nausea, vomiting, dyspnea and ataxia. Additional isolated symptoms include disturbed sleep, periodic breathing, pharyngitis, increased flatus and snow-blindness.

Acetazolimide is the gold standard to prevent and treat these conditions. However there are other medications that have been proven effective. Descent to a lower altitude is the definitive treatment of high-altitude illness and the most effective prevention is gradual acclimatization.

LEARNING OBJECTIVES:

- 1) Understand the physiological changes that occur at high altitude.
- 2) Recognize the symptoms that occur with altitude illness.
- 3) Learn the measures to minimize occurrence of altitude sickness.
- 4) Learn treatment of conditions that occur with altitude illness.
- 5) Be able to counsel climbers planning a trip to a high-altitude area.

Mountains are the subject of many art forms, from paintings and photographs to many popular songs. They are the backdrop to many myths and folk tales and are truly one of Nature's most beautiful creations. Yet mountain climbing is a potentially deadly sport. Most people know climbers need to be in good shape to summit a mountain. Even though good conditioning may be adequate when scaling peaks below 8,200 feet, even the elite athlete will have trouble with rapid ascent if the proper preparation and precautions are not taken when climbing above 8,200 feet.

High Altitude is defined as 4,950 to 11,500 feet. A famous example is Mount Washington in New Hampshire, the highest peak in the Northeast USA at 6,288 feet. *Very High Altitude* is 11,500 to 18,050 feet high. An example is Mount Whitney in the Sierra Nevada Range of eastern California, the highest peak in the lower 48 States

at 14,505 feet elevation. Extreme Altitude is above 18,050 feet. Examples include Mount McKinley, the highest peak in the US at 20,320 feet and, most famously, Mount Everest at 29,035 feet.

Although the proportion of oxygen in the atmosphere always remains the same, the "driving pressure" decreases as one ascends to the higher altitudes. The "driving pressure" depends directly on the barometric pressure and forces oxygen from the atmosphere into the pulmonary vasculature.¹ The partial pressure of oxygen is even lower in the northern latitudes. High-altitude illness is related to hypobaric hypoxia and its consequences of pulmonary vasoconstriction and pulmonary hypertension. To counteract this, our bodies respond by increasing the respiratory rate in order to attempt to improve oxygenation which is low due to the decreased partial pressure of oxygen at altitude. As a result, alveolar oxygenation increases and alveolar carbon dioxide decreases resulting in a respiratory alkalosis. Increased renal bicarbonate excretion occurs in an attempt to correct the respiratory alkalosis. If the kidneys are unable to correct the alkalosis in a timely fashion (as in a rapid ascent), the lingering alkalosis will inhibit the central respiratory center and limit ventilation, worsening oxygenation. The environment at altitude can also cause an increase in water loss (dehydration), catecholamine-induced elevated heart rate, systemic blood pressure, pulmonary artery pressure and cerebral blood flow.

Taking into consideration the physiological changes described, there are a whole constellation of symptoms that can occur at high altitude. The most common of these conditions is *Acute Mountain Sickness (AMS)*. The incidence of AMS correlates to the absolute height attained and the rate of ascent and typically occurs above 8,200 feet. Although not lethal at this stage, if not properly treated, AMS can progress to life threatening conditions described below. A primary symptom is headache which is worse at night and exacerbated by a Valsalva maneuver (i.e., stooping over). Additional symptoms include anorexia, nausea, vomiting, disrupted sleep, dizziness, fatigue and lassitude. Sufferers have described feeling as if they had a hangover. Frequently, normal diuresis does not occur. It is important not to proceed to a higher sleeping altitude if you are showing any of these symptoms. Ascent can resume, in mild cases, once symptoms resolve with acclimatization after 12 hours to 4 days.

It is recommended to climb gradually by stopping for 1 to 2 days of rest for every 2,000 feet of ascent. If symptoms persist, the symptomatic climber should descend 1,650 to 3,300 feet. At any sign of progressive neurological changes such as ataxia or

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altered consciousness, the climber should descend immediately. Acetazolamide 125-250 mg twice daily has been helpful in preventing and treating AMS. It is a diuretic that facilitates the process of renal bicarbonate excretion in order to correct respiratory alkalosis. For prevention, it is recommended to start acetazolamide the evening before and continuing for 3 days once the highest altitude is reached.¹ Side effects of acetazolamide are polyuria and paresthesias. Ginkgo biloba has not been shown to be effective.⁶ Headache can be reduced with low flow nasal O₂, aspirin, acetaminophen or ibuprofen. Nausea and vomiting can be treated by prochlorperazine 5 mg PO or IV. Other treatments include dexamethasone 4 mg PO or IM q6h as needed and a portable hyperbaric bag (i.e., Gamow Bag or Chamberlite Bag). Usually the hyperbaric bag is used for the more serious of altitude conditions or in situations where descent is not a viable option.

A class of drugs which has been studied in the prevention and treatment of high altitude sickness is phosphodiesterase inhibitors (i.e., sildenafil, tadalafil). Even though they have shown to improve oxygenation and pulmonary edema, there is no strong evidence that they improve outcomes or facilitate resolution.⁷

As mentioned earlier, the conditions of hypobaric hypoxia can lead to the development of pulmonary hypertension. In severe cases, this can lead to a form of non-cardiogenic pulmonary edema called *High-Altitude Pulmonary Edema (HAPE)*. This condition is more common in climbers under 20 years of age and typically occurs at night 1 to 3 days after the ascent has begun. **IT IS A MEDICAL EMERGENCY AND THE MOST COMMON CAUSE OF DEATH AT HIGH ALTITUDE.** According to the Lake Louise Diagnostic Criteria³, in the face of a recent gain in altitude, two of the following symptoms should be present and two of the following signs present to diagnose HAPE. The symptoms may be: dyspnea at rest, cough, weakness or decreased exercise performance, chest tightness or congestion. The

signs may be: rales or wheezing in at least one lung field, central cyanosis, tachycardia or tachypnea.

The treatment for HAPE is a rapid descent of at least 2,000 feet. If rapid descent is not practical and HAPE is severe, oxygen should be delivered at 2-4 liters/m, give oral nifedipine 10 mg once stat and then sustained-release 30 mg every 12 hours. Hyperbaric bags can be used as a temporary measure until descent can be accomplished.

The most serious and life threatening scenario is the progression of the syndrome from AMS and HAPE to *High-Altitude Cerebral Edema (HACE)*. Mortality rate in untreated patients is 13%, if coma occurs the mortality rate rises to 60%. It is related to vasogenic cerebral edema with increased intracranial pressure and encephalopathy. Symptoms progress from fatigue to lethargy to coma. The sensitive indicator of HACE is ataxia. A tandem gait test is the best way to screen for ataxia since it may not be evident in finger-to-nose testing. As one might have guessed, the definitive treatment of HACE is immediate descent. The descent should initially be at least 2000 feet and then descent should continue rapidly until there is resolution of symptoms. If immediate descent is not possible, then supplemental oxygen should be administered 2-4 l/m as well as dexamethasone 4 mg (PO or IM) every 6 hours.

In addition, there is an entire constellation of symptoms that occur independently from AMS, HAPE and HACE. These include sleep disturbances, periodic breathing (Cheyne-Stokes), pharyngitis and bronchitis, thrombotic events, increased flatulence, migraines, ultraviolet keratitis (snow blindness due to corneal burns) and retinal hemorrhages.

Altitude sickness is an entirely preventable condition. Aside from the drugs mentioned above for prophylaxis, there are a number of behaviors to be observed to avoid altitude sickness:



1. Avoid going too high too quickly. Above 9,000 feet, the sleeping altitude should be no higher than 1,500 feet above the previous night's altitude. The sleeping altitude, not the altitude achieved during the daytime, is the important factor.
2. While ascending, every second or third day should be rest day.
3. Avoid excessive exertion in the initial days.
4. Avoid alcohol.
5. Maintain vigorous hydration.
6. Maintain a high carbohydrate diet.

There is a population of patients who should not participate in high-altitude travel. These include patients with: 1) Uncompensated congestive heart failure (CHF), 2) Pulmonary Hypertension, 3) Sickle Cell Anemia, 4) Severe Chronic Obstructive Pulmonary Disease (COPD). High altitude climbing for people with the above mentioned conditions is CONTRAINDICATED.

Patients with the following medical issues are at increased risk of complications at high altitude. Even though they should be particularly cautious with these conditions, high altitude activities are not contraindicated. These include: 1) Moderate COPD, 2) Compensated CHF, 3) Sleep apnea, 4) Controlled Cardiac Arrhythmias, 5) Stable Angina/Coronary Artery Disease, 6) High risk pregnancy, 7) Sickle cell trait, 8) Cerebrovascular disease, 9) Conditions with Restricted Pulmonary circulation, (e.g., recent pulmonary embolism), 10) Untreated or uncontrolled seizure disorder, 11) Radial keratotomy.

High altitude activities can be very exhilarating and satisfying sports. Being well prepared for such activities is more than having the right equipment and being in good physical condition, it also means being aware of potential physiological dangers that can occur.

Altitude sickness is only one of the many fascinating topics that comprise wilderness medicine. I attended the annual meeting of the Wilderness Medicine Society (WMS) in Bozeman, Montana and became hooked. This led me to seek out further adventures in wilderness medicine such as riding northern Californian rapids, surviving a night in the New Mexican desert and the scaling of Mount Shasta and Mount Whitney. These were all certainly thrilling memories for this Brooklyn native.

The Wilderness Medical Society is an education and research-based membership organization and has become one of the pillars of the curriculum for wilderness medicine education, including CME programs, medical school rotations, outdoor programs and Fellowship criteria. In addition to the Society's annual meeting, it also sponsors topic specific meetings (e.g., Winter Wilderness Medicine and Dive Medicine) and the quadrennial World Congress in Wilderness Medicine.

Whether you are interested in exploring wilderness medicine as a career or a hobby or just like learning about the great outdoors, I recommend you start by logging onto the WMS website (www.wms@wms.org) to see the activities and opportunities available. If you get yourself onto the mailing list, you will receive announcements of upcoming programs.

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Raymond L. Ebarb, MD, FAAFP, is a Board Certified Family Physician in private practice for 25 years. He is on the faculty of both SUNY Stony Brook and Hofstra Medical School. He is the Medical Director of the Association of Help for Retarded Children in Bohemia, NY and is the current President of the New York State academy of Family Physicians. Dr. Ebarb has special interest in Disaster and Wilderness Medicine.

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CME POST-TEST

Instructions:

Health care professionals seeking AAFP credits will receive 1 credit for the year in which the quiz is taken upon the completion of this quiz online at www.nysafp.org under the **Education and Events tab**. Health care professionals seeking Category 1 AMA credits are eligible to receive 1 credit in Category 1 of the Physician's Recognition Award of the AMA.

NYSAFP staff will notify those who take the quiz of their scores.

Physicians are responsible for reporting their own CME credits to their respective organizations.

(1) Which one of the following statements is incorrect:

- a. Altitude Sickness can occur at altitudes above 4,200 feet.
- b. Good physical conditioning prevents Altitude Sickness.
- c. Vigorous hydration is important to help prevent Altitude Sickness.
- d. Uncompensated congestive heart failure is a contraindication to high altitude travel.

(2) Which of the following choices best describes the definitive treatment for Altitude Sickness:

- a. Gingko biloba
- b. Rest
- c. Hydration
- d. Nifedipine
- e. Descent to a lower altitude.

(3) Recommended steps to take to prevent Altitude Sickness are the following except:

- a. High carbohydrate diet
- b. Climb gradually by stopping for 1-2 days rest every 2000 feet.
- c. Vigorous hydration.
- d. Sleeping at the highest altitude achieved.
- e. Acetazolamide

(4) Which of the following statements are true:

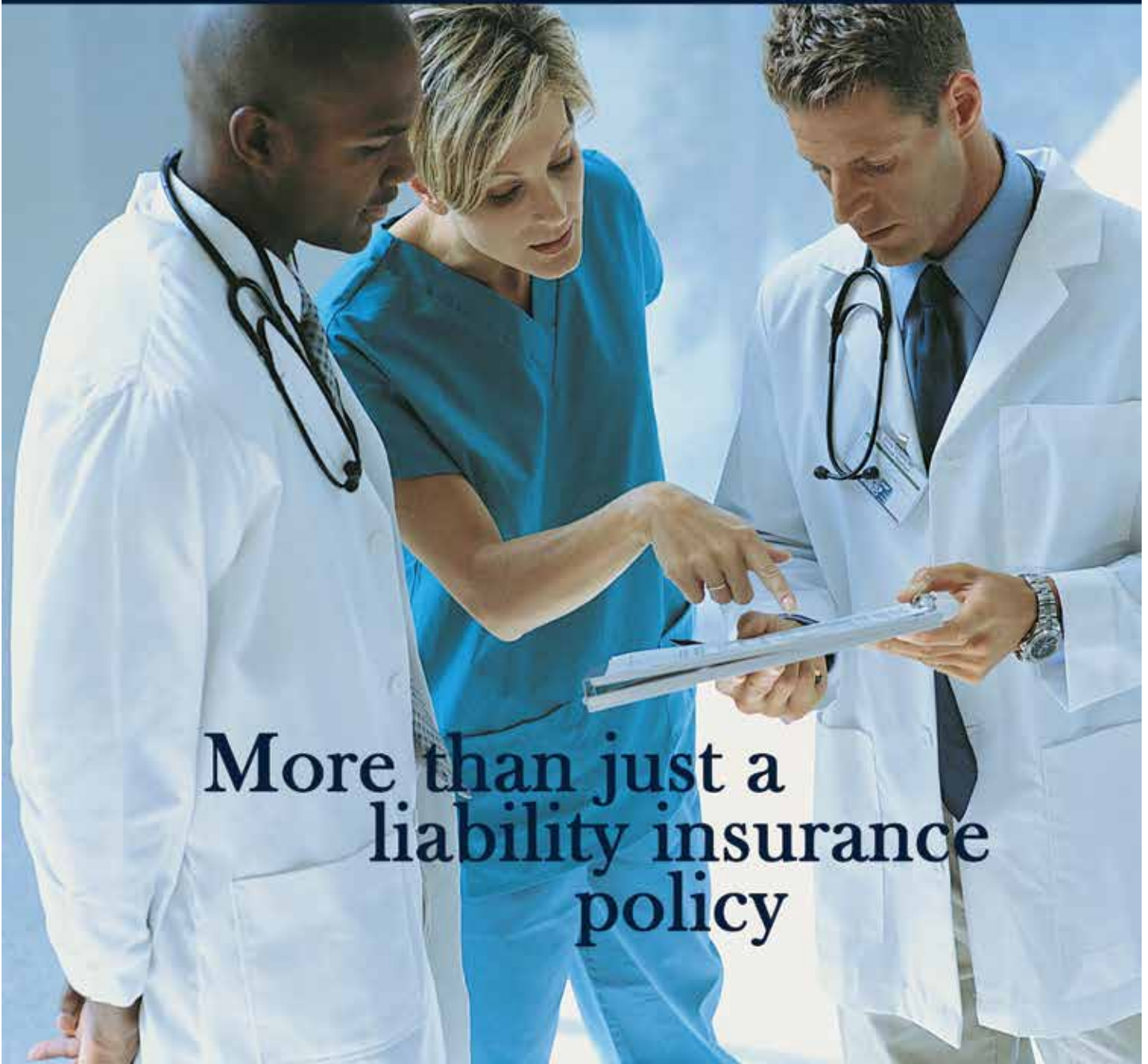
- a. HAPE is the most common cause of death at high altitude.
- b. Alcohol helps promote diuresis and can help you acclimate to altitude.
- c. Moderate COPD puts the climber at increased risk of complications but is not contraindicated.
- d. Excessive exertion at the beginning of the climb will help the climber acclimate more quickly.
- e. A & C

(5) In which of the following conditions would a high altitude climb be contraindicated:

- a. High risk pregnancy
- b. Sleep apnea
- c. Recent pulmonary embolism
- d. Sickle cell anemia
- e. Cerebrovascular Disease

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