

NECOEM *Reporter*

Summer 2019

Online Edition

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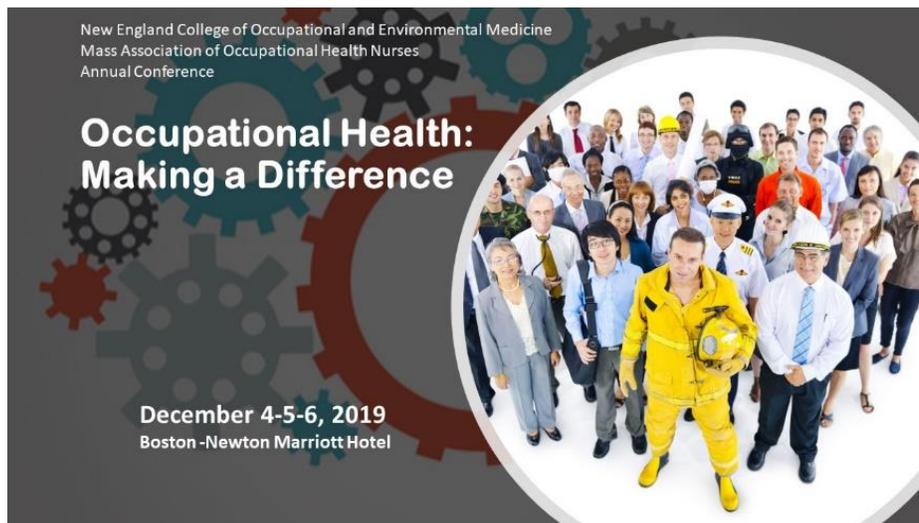
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***Lower Extremity
MSK Exams– Hands On Practicum
(limited enrollment)**

Concussion: Emerging Epidemic

Concussion: A Focus on Vision

At-Risk Patients Treatment

Cervical Spine

The Knee: Dx and Treatment

Journey in OccMed

Obesity and Worker Comp

Improve UR Outcomes

Wound Care Gold Standards

Marijuana in the Workplace

Bloodborne Pathogens/ TB Update

Imaging the Lower Extremity

DOT/NRCME Update

Occupational Dermatology

Vaccinating HealthCare Workers

Poster Session

Career Panel

Stop the Bleed Workshop

and much more

Visual Sequelae of Concussion:

Post Trauma Vision Syndrome (PTVS)

and

Visual Midline Shift Syndrome (VMSS)

plus...

An Interview with Neuro-Optometrist, Colin Robinson, OD

By Susan Upham, MD, MPH, FACOEM

Effective evaluation and management of concussion by OEM clinicians is a critical skill for those who carry out

clinical duties. So, NECOEM has recently supported various educational activities related to this topic, including AC educational sessions, an article titled “Return to Work After Concussion” by neurologist Kwame Asante MD in the Summer 2018 Reporter Newsletter, and two “concussion” themed MEET UP Webinars. It was at the first MEET UP that a knowledge gap among the attendees regarding concussion related vision disturbances was identified and this stimulated the idea of further exploring this topic. Therefore, we included in our most recent session, a presentation by Dr. Colin Robinson, OD, neurooptometrist, who discussed the topics of **post trauma vision syndrome** and **visual midline shift syndrome**.



As a practicing OEM clinician, these past several years have been particularly busy as it relates to concussions. The causes have been varied - snow and ice related slips/falls, assaults (sometimes multiple) of workers in various settings (e.g. facilities where care is provided for mentally disabled or ill individuals, public safety, the public school systems), motor vehicle accidents, falls from a height, and unpredictable traumas such as the case where the worker tried to close an old window, and the whole thing dislodged from the wall and struck her head (!) Clinically, the vast majority were uncomplicated and improved, and were resolved within several weeks. However, there were those few with ongoing symptoms that required additional consultations, usually with specialists in neurology, ophthalmology or ENT. When vertigo was a prominent symptom, I would often refer to a vestibular therapist. Historically, I have relied on the recommendations of my specialists to assist in teasing out the clinical nuances of these cases including recommendations for further evaluation, when needed. Interestingly, only a particularly knowledgeable case manager and a vestibular therapist encouraged me to refer a few of these patients to a [neuro-optometrist](#). What I found was a less familiar but effective form of treatment for these slow to recover cases.

Based on these experiences, I suspect that many of us can benefit from this review, as it can offer well needed help to some of those patients troubled by difficult to manage post-concussion symptoms.

Before entering a discussion about these two syndromes, it is important for the practitioner to know that numerous vision disturbances have been identified as a result of head injury. Armstrong (2018) summarized the various visual conditions and symptoms that can occur after a head injury.

Table 1
Potential Visual Conditions and Symptoms
Status Post Head Injury

- ▶ Intermittent or chronic photophobia
- ▶ Deficit in color vision
- ▶ Abnormal pupillary function
- ▶ Eye movement disorders
- ▶ Nystagmus
- ▶ Visual hallucinations
- ▶ Complex syndromes
- ▶ Reduced visual acuity, depth perception, visual fields, accommodation, reading ability, motion vision, visual perception response time and accuracy, and visuospatial function
- ▶ Sleep disturbance - in particular related to non-rapid eye movement sleep
- ▶ Critical flicker fusion frequency threshold change - the frequency where flickering light stimulus appears as a steady light
- ▶ Vestibulo-ocular reflex abnormality - a reflex in which the eye movement stabilizes images on the retina during head movement
- ▶ Changes in electrophysiological measures -visual evoked potentials, somatosensory evoked potentials

The list is daunting but suggests to the practitioner that close attention to the visual system, whether the symptoms are overt or subtle, especially when the patient is suffering with lingering concussion related symptoms, should be included in the evaluation of every head injury. Consideration of neuro-optometric evaluation should be made in these cases.

**Post Trauma Vision Syndrome and Visual Midline Shift Syndrome:
An Introduction**

Padula et al (1996, 2017) have performed research and authored reviews of Post Trauma Vision Syndrome and Visual Midline Shift Syndrome due to traumatic brain injuries as well as other neurological conditions. They report that imbalance between the two primary functions of vision, **the focal and ambient visual processes**, seemed to trigger a variety of symptoms including problems with “balance, posture, ambulation, reading, attention, concentration and cognitive function.”

So, what are focal and ambient visual processes? Highlights from detailed articles by Padula et al (1996, 2017) include the following key concepts. 1) The visual system is composed of two separate processes. The **focal process** is a conscious process, neurologically representing central vision mainly via the macula. “Aiming your eye at an object and fixating on it represents this central focalization.” The **ambient process** is a “preconscious process” and refers to peripheral vision. It is primarily used "as a general spatial orientation system," allowing one to know where they are in space and providing the neurological information used for “balance, movement, coordination and posture.” This process is mostly motor oriented, is part of a sensory motor feedback loop involving the midbrain, must match multiple neurological inputs (kinesthetic, proprioceptive, vestibular and tactile), and acts as an “orienter” and “master organizer” of this information which then is transmitted to the brain cortex. 2) **With a neurological incident to the head, such as a concussion or even mild whiplash, “the ambient visual process can lose its ability to match information with other components of the sensory motor feedback loop.”**

Padula W et al (1996) performed research using Visual Evoked Potentials to assess mid brain function and determined that **post trauma vision syndrome** was due to “dysfunction of the ambient visual process.” This results in the following characteristics and symptoms listed in Table 2 (modified from Tables from Padula W et al 1996, 2017.)

Table 2 Post Trauma Vision Syndrome S/S	
Clinical Feature	Symptoms
Exotropia (one or both eyes turned outward)/ Exophoria (tendency of eyes to drift outward)	Double vision
Convergence insufficiency (inability to keep the two eyes working together while working at a near distance)	Poor concentration and attention
Accommodative insufficiency (inability to focus or sustain focus at near distance)	Perceived movement of print or stationary objects Nonspecific eye strain symptoms: eye fatigue, discomfort, lacrimation and headaches
Oculomotor dysfunction (when the muscles that control eye movements are not properly coordinated)	Headaches
Increased myopia (near sightedness)	Photophobia
Low blink rate	Staring behavior

Spatial disorientation	Neuro-motor difficulties
Increased myopia	Dysfunction of balance, coordination and posture
Other	<p>Visual memory problems</p> <p>Reading difficulties: e.g. not being able to find the beginning of the next line when reading, losing your place when reading</p> <p>Dizziness</p> <p>Nausea</p> <p>Blurry vision</p>

Visual midline shift syndrome is another potential consequence of head injury in which “the ambient visual process changes its orientation” regarding the system’s sense of “midline.” This shift can be lateral or anterior/posterior.

A simple wand method to detect vision midline shift syndrome can be utilized to detect this problem. Padula W et al (1996) and the Postural Restoration Institute (2009) article “Visual Midline Shift Test” are available online for free and offer detailed accounts of this disturbance and how to initially test for it.

Lateral shift testing: Ask the patient to visually follow a wand/pen in front of their face, keeping their head still. Per Padula W et al (1996), a wand about 16 inches from the patient’s face “is passed before the person laterally and they are asked to state when the wand appears to be directly in front of the person’s nose. A high correlation has been found with a shift in midline away from the neurologically affected side.”

Anterior posterior shift testing: Per the Postural Restoration Institute (2009), this is performed “by holding the wand horizontally” and passing it up and down in front of the persons face. “The person should be instructed to tell the examiner when the wand appears to be at eye level. First, hold the wand horizontally above the persons face and have them look upward toward the wand. Bring the wand from this position downward and tell the person to instruct you when the wand appears to be at eye level....Next, hold the wand beneath the persons face and move it upward asking the person to respond by saying when the wand appears to be directly at eye level...If the wand was determined at eye level when really it was **above** their eye level position, it indicates a shift in their visual midline **posteriorly**. Frequently, persons with this shift in visual midline when walking or seated in a chair will thrust their weight forward and assume a position of more flexion.... If the wand was determined at eye level when it was really positioned **below** their eye level, it indicates a shift in their concept of visual midline **anteriorly**. Persons with this distortion will experience an extended posture or a tendency to lean backward either while seated or while walking.”

Various symptoms are associated with this condition, as listed in Table 3.

Table 3				
Visual Midline Shift S/S (Padula)				
Dizziness	Nausea	Back pain	Muscle rigidity	Spatial disorientation
Problems with ambulation: Consistently drifting to one side of hallway or room, bumping into objects when walking, poor balance or posture leaning forward, backward or to one side				

How common is VMSS? How often does it occur in non-head injury patients? Tong D et al (2016) performed a study of 60 subjects (30 with TBI, 30 without TBI) and found that the incidence of this condition was 93% in a group of TBI patients v. 13% in the non-TBI group, a difference that was statistically significant. Padula W et al (2017) cites studies suggesting anywhere from 30% - 74% of brain injured patients could be impacted visually.

An Interview with Neuro-Optometrist, Colin Robinson, OD

Dr. Robinson practices in Windham, Maine and I have had the opportunity to refer patients to him for evaluation of concussion related vision disturbances. He has been passionate about this field for 20 years and cites Drs. William Padula and Stefan Collier as mentors. He has achieved the NORA’s Clinical Skills Certificate 2 and has completed

additional post graduate training, including a 55-hour course at the Sheppard Rehabilitation Center in Atlanta, Georgia. He is certified in Neuro-Visual Postural Therapy.

When asked why so few doctors seem to know about these conditions, he shared that it is likely because this is emerging field of medicine, with interest in it developing only within about the past 20 years or so. “This area of study was not included in the curriculum of many optometry schools so many of our practicing general optometrists do not have expertise in evaluation of these conditions. Fortunately, in the mid-late 1990s, optometry schools started to adopt training programs on this topic. In response to the need in this field, The Neuro Optometric Rehabilitation Association (NORA) was formed by seven optometrists who were interested in offering educational programs regarding this subject. Now it is truly multidisciplinary, and fourteen different medical specialties are involved with this organization.” They have a very informative website that patients and clinicians can use to learn more about this topic (<https://noravisionrehab.org/>).

What does he typically see in patients presenting with these vision disturbances? In his experience treating post-concussion cases, most will present with 2-4 significant symptoms. Light sensitivity is a huge problem, others have more of a balance problem and then others complain of overstimulating environments, such as being in stores where there is a great deal of peripheral visual movement. He encourages the treating clinician to also consider these vision disturbances when the individual demonstrates “blurred vision, headache, oscillopsia, loss of ability to know where you are in space, difficulty judging distance/scale, dysmetria, balance problems, reports of peripheral movement, has ongoing “brain fog” or has difficulty with comprehension.”

Knowing that many post-concussion patients will demonstrate a variety of these symptoms early on but will go on to resolve within several weeks, Dr. Robinson was asked about when we should consider referral for evaluation. It is his opinion that the earlier, the better and early treatment seems to translate into better outcomes. He suggests referral between about 1-3 months post injury. If one waits, by 6-18 months post injury, many of these patients have developed adaptations that take more intensive treatment and longer time to recover, again suggesting the benefit for earlier referrals. Is it ever too late to refer? Though the science on this is not clear, he has seen treatment benefit to individuals presenting for treatment years after their injury.

If the clinician wants to make a referral to an optometrist for this condition, what type of training should the optometrist have? One needs to investigate the training background of the provider. Dr Robinson states, “I believe the best referrals would be to an optometrist that has taken at least the initial level 1 training with the NORA organization, done only during the annual conferences. NORA has a Clinical Skills certificate awarded to optometrists who complete both Level 1 and Level 2, who present a case study to the whole NORA organization, and achieve a passing grade. Also, I believe that at least a basic understanding of **Syntonic Optometry (Phototherapy)*** is very helpful with treatment of some of the patients we see with significant sympathetic nervous system overstimulation symptoms. The training and certification for optometrists is completed at post graduate levels, since there are few significant programs on this topic provided during formal training. So...Most all optometrists have not had this in their training to be an optometrist.”

***Syntonic phototherapy.** Excerpted from Gottlieb, RL. Proceedings of the SPIE, Volume 7552, id. 75520N (2010)

“Syntonic phototherapy is an application of clinical phototherapy. Syntonics uses non-coherent, non-polarized, broad-band light delivered into the eyes to treat brain injury, headache, strabismus, eye pathology, learning disability, mood and developmental syndromes. The eyes permit direct, non-invasive application of light to the retinal blood supply and to non-visual, retinal photoreceptor systems that signal circadian and other brain centers. Patients look at prescribed colors for 20-minutes/day for twenty treatments.”

Are there simple screening tests for these conditions that can be done by the clinician early on? Certainly, clinical suspicion based on signs and symptoms can lead one to suspect these disorders. To start, during the clinical evaluation, the examiner can easily perform a wand test for vision shifting.

In evaluating a patient, Dr. Robinson stated, “I believe the most important skill to be developed is observation of the patient. It starts with my first meeting with the patient - observing their gait and taking a history. I do several localization techniques to check for possible visual midline shifts. I rely more on observation of the patient's movement while wearing their typical corrective lenses and then with wearing trial testing prisms. I only recommend prism therapy if I see an improvement with the patient's balance and stability and awareness of their feet while walking. I also use the following tests to help evaluate some of my patients: VEP (visual evoked potential), **RightEye**** Testing and Analysis for an accurate assessment of the patient's oculomotor control system, and a functional Syntonic's assessment for a possible phototherapy program to be done at the patient's home.”

****RightEye** is a company that has developed eye-tracking technology “designed to capture and score eye movement for prediction, evaluation, and improvement in patient outcomes”. M. Batista, 8/16/18, Medgadget.

Regarding treatment, “the cornerstone elements of vision rehabilitation would be using lenses, prisms, occluders, filters, and other optical devices are all within the scope of optometrists. Neuro-optometric therapy often combines some of the above elements with a type of vision therapy called Neuro-Visual Postural Therapy, which can be very helpful, especially for those patients with long-term problems with their balance and coordination of their visual, vestibular and proprioceptive centers.”

Case Study

Week #1: This patient was a 28-year-old School Counselor who stated that about 1 week prior to this visit, she was assaulted by a student at work. He punched her on her left face, grabbed her by the shirt, and pulled out some of the hair of her left scalp. She could not recall any further details of the actual incident. She does not recall striking her head. She recalls going home after the incident, and then, that evening, developed a severe headache, nausea without vomiting, pain in the right shoulder, neck and lateral chest, noise sensitivity, dizziness, fatigue, forgetfulness, difficulty focusing and severe photophobia. She underwent initial urgent evaluation then next morning and was referred to PT, having had one visit prior to our meeting. She continued to have ongoing symptoms, including fatigue, nausea, dizziness, light and sound sensitivity, and could not tolerate light duty, 4 hours shifts.

She denied other neurological complaints, such as numbness, vertigo, weakness, or loss of appetite. She had no prior history of head injury and her medical, surgical and hospitalization history were reviewed and noncontributory except that she had a history of stomach ulcers and avoided using anti-inflammatory medications. She was a nonsmoker, nondrinker and did not use other substances. She took no prescription medication and was relying on Tylenol for pain control.

On initial exam, she was extremely light sensitive, so I lowered the lighting in the exam room for her. Her neurological exam was normal, including a mini mental status exam, except for weakness, 4/5 of the right shoulder with resisted abduction and flexion. There was tenderness of her left scalp without swelling, the occiput diffusely, the right SCM, right posterior neck and the right shoulder diffusely. There was tenderness of the right periscapular muscles, trapezius and anterior upper chest wall. Provocative testing for cervical radiculopathy and a rotator cuff tear was negative. The fundoscopic exam revealed sharp optic discs. The rest of the HEENT exam was normal including absence of tenderness of the facial structures.

She was removed from work for therapeutic rest. She was continued with therapy for her musculoskeletal complaints. Considering her normal neurological exam one-week post injury, no diagnostic studies were ordered.

Weeks #2-8: She was seen several more times over the next 6-8 weeks. At about 6 weeks postinjury, she could return to work, restricted hours, but was not allowed to drive her vehicle. Around that time, her case manager referred her for vestibular therapy. By the 8th week, she was improving but continuing to complain of dizziness, headaches - often triggered by intense focus activities, loss of memory, imbalance, light sensitivity, and restricted peripheral vision.

Week #9: At that point, the vestibular therapist expressed concerns over her vision, so she was referred to Dr. Robinson for further evaluation, who saw her at 9 weeks postinjury. I also referred her to neurology for an evaluation and no changes in her treatment plan were recommended.

Dr. Robinson reported that she had evidence of **eyestrain** when doing saccadic eye movements and **left along with posterior visual midline shift** findings. He identified sympathetic nervous system overstimulation. Gait assessment revealed instability with a tendency to drift to the left side. This improved with a trial of testing prisms and taping over her glasses. He treated her with application of a 6 mm wide strip of tape over each eyeglass lens to create the effect of a yoked prism. Dr. Robinson’s report stated, “if AC’s visual midline shift condition has not yet caused brain compensations, this taping can possibly resolve the visual midline shift condition by tricking the brain into having a much more normal internal perception of her visual midlines – both lateral and anterior/posterior.” He also had her initiate **Syntonic’s** light/color therapy to help balance her autonomic nervous system since it seemed her sympathetic system was overstimulated.

Week #14: At about 14 weeks post injury, she changed to a new job where she would not be working with violent clients and at that time was cleared for regular duty for that new job. She seemed to tolerate this work but was still experiencing symptoms.

Week #17: By approximately 17 weeks post injury, she reported substantial improvement in her overall balance and

coordination and fewer headaches. The width of the taping over her glasses was adjusted and she was continued on Syntonic's Light Therapy but switched to a different shade of blue.

Week #22: Upon reevaluation by Dr. Robinson, her visual midline shift testing was normal. Her visual condition was determined to be resolved. She was able to discontinue the therapeutic taping of her glasses and the Syntonic's light therapy.

She was lost to follow-up from my practice at that time, but as of the last visit, was reporting dramatic improvement in her balance, coordination and headaches at the time. She was working regular duty in her new job.

Dr. Robinson further reflected on this case. "I was able to evaluate her a little more than 2 months post injury and even though she had significant symptoms with her balance and visual overstimulation, she responded very well with taping her glasses which simulated the effect of wearing special yoked prism glasses. The taping shifted her eyes slightly laterally and posteriorly which directly affected her lower body balance (proprioceptive) centers. Also, she responded very well to a home Syntonic's light/color therapy which helped her reduce her significant sympathetic nervous system over stimulation symptoms. Since she did so well with these therapies, she did not require any special yoked prism glasses or other therapies from my office."

Many thanks to Dr. Robinson for sharing his expertise with me in the preparation of this article and for his Meet Up presentation to NECOEM members in early 2019.

Dr. Colin Robinson Biography

I am a graduate of the Optometry School at SCO in Memphis, Tenn. In 1975, I entered the USAF and had my first assignment as optometrist in Colorado Springs from 1975-1978. I was re-assigned to Spangdahlem AB in Germany from 1978-1983 and then to Hanscom AFB in Bedford Mass. from 1983-1985. In 1985, I separated from the USAF and set up solo optometric practice in Windham, Maine. For the next 11 years I served in the US Air Force Reserves and retired with the rank of Lt. Colonel (05).

From 1985-2015, I worked in three different Windham, ME locations, with the latest being at the Robinson Center for Neuro-Visual Rehabilitation, LLC at 584 Roosevelt Trail, suite B, Windham, 04052. Between 2001-2013, I developed a busy Vision Therapy program in my office where we mainly worked with children, ages 8-15. I became very interested in Neuro-Optometric Rehabilitation, attended training courses through NORA (Neuro-Optometric Rehabilitation Association) and was awarded certification for clinical skills through NORA in 2002. From 2002-2015, I saw between 400-500 patients/year who needed Neuro-Optometric Rehab. Services. I now work 3 days/week and feel very fortunate to be able to continue with the passion I have developed in working with patients suffering from concussions, CVA, MS, Parkinson's, Lyme Disease and a variety of other conditions not treatable via regular Optometric therapies.

References

- Armstrong RA.** Visual problems associated with traumatic brain injury. Clin Ex Optom 2018.
- Gottlieb, RL.** Proceedings of the SPIE, Volume 7552, id. 75520N, 2010.
- Padula W et al.** Post Trauma Vision Syndrome and Visual Midline Shift Syndrome. Neurorehabilitation 1996.
- Padula W et al.** The consequence of spatial visual processing dysfunction caused by traumatic brain injury (TBI). Brain Injury, 2017.
- Tong D et al.** High prevalence of visual midline shift syndrome in TBI: A retrospective study. Vision Dev & Rehab 2016.
- Postural Restoration Institute.** Visual Midline Shift Test. 2009.



NEWS FROM MAINE

**STUDY PLANNED OF NEW PROTOCOL FOR
DIAGNOSIS OF LYME
DISEASE IN HIGH RISK STATE EMPLOYEES**

By Mary Hicks

Of the dozens of tick species present in the United States, two carry the Lyme Disease bacteria, borrelia burgdorferi, although a new species of bacteria, called borrelia mayonii has been observed in ticks found in the American Midwest. Lyme Disease is one of several vector-borne diseases carried by ticks, but it is the one disease that ticks are infamous for transmitting. It presents with symptoms such as headaches, pain, joint stiffness, facial palsy, and the conspicuous bull's-eye rash. Without treatment, Lyme Disease can evolve into a severe condition, targeting parts of the body such as the joints and heart, which can lead to permanent damage of those tissues.

It can develop from tick bites in occupational and non-occupational settings. According to the Maine CDC, from 1999 to 2013, there were 276 reported cases of Lyme Disease in Maine as a result of occupational exposure.

Not every tick bite results in infection. Several variables determine a person's likelihood of contracting the disease. The tick must be engorged and must have been attached for at least 36 hours before the risk is even significant enough for a doctor to consider prophylaxis. In these cases, or when the length of tick exposure is unknown, a patient will receive one day of prophylaxis, in concord with CDC recommendations. The use of prophylaxis after tick exposure and other preventative measures, such as insect repellants and thorough tick checks, can reduce the risk of Lyme Disease, negating the need for treatment.

For patients in whom this disease has developed, a diagnosis is usually reached through an analysis of their symptoms, as listed above. Once diagnosed, the treatment includes 14-21 days of the antibiotic doxycycline to kill the borrelia burgdorferi bacteria.

Testing of the blood for Lyme Disease in humans includes performance of the enzyme immunoassay (EIA) and indirect immunofluorescence assay (IFA) tests. A negative EIA test voids the need for further testing. However, both tests must be positive to confirm the disease. EIA tests are extremely sensitive and are conducted for screening purposes prior to IFA, which searches for IGM and IGG antibodies. As per the CDC endorsement, the IFA test is not conducted without first receiving a positive EIA test to ensure overall accuracy. However, these tests are not necessary for a diagnosis, and frequently, clinical diagnosis using only the presenting signs and symptoms are used to make this determination.

A new study proposed by Dr. Kenji Saito at MaineGeneral Workplace Health (Augusta, ME) proposes a redesigned protocol regarding the diagnosis of Lyme Disease, specifically for high risk employees of the State of Maine - game wardens and other state workers with increased exposure to tick bites. The study, still in the early stages of development, will employ several testing methods in order to make a diagnosis. Patients will be tested immediately when they receive their prophylaxis treatment, the results of which should be available within a few days. In addition, the patient will be tested again after 30 days, and if the patient or doctor was able to collect the tick, it will be sent to a lab at the University of Maine for bacteriologic testing. This proof-of-concept study hopes to be able to provide faster and more effective diagnoses for the game wardens, whom Dr. Saito believes, because of their increased risk of tick exposure and thus Lyme disease as a result of their profession, will benefit from a more thorough approach to diagnosis.

After receiving IRB approval, the study will enact this new protocol with volunteer test subjects, a group composed of game wardens across Maine, and begin collecting data over the length of tick season into September. The data will aim to either support or refute the claim that the new procedure is an effective method of Lyme Disease diagnosis.

The results of this year's study will be presented at the 2019 NECOEM annual conference in Newton, MA. This is the first stage of research; after the publication of the results of this study, Dr. Saito plans to collect a second sequence of data in 2020, which will be compared to the results this year before all of the data is compiled and consolidated in order to arrive at a final conclusion.

Ron and Jay's Truck Stop, or Go?

By Drs. R. Blum and J. Poliner



To all our Commercial Driver Medical Examiners (CDMEs) ... this column is for YOU! Have an interesting question or problem case to share in a future newsletter? Do you have any other thoughts or opinions about these cases presented in this article? Send them to Newsletter Editor, Susan Upham, MD, MPH, FACOEM at supham@roadrunner.com

Case 1: The Missing Thumb Driver A CDME asks: “A commercial interstate driver is seen for the first time in

our office for his medical certification exam. He has a well-healed amputation of one thumb. Is a Skill Performance Evaluation (SPE) indicated?

Truck Stop Thoughts: The CME is obligated by regulation 49 CFR* 391.41(b)(7) to determine that the candidate “has no established medical history or clinical diagnosis of...orthopedic disease which interferes with his/her ability to control and operate a commercial motor vehicle safely.”

49 CFR 391.41(b)(1) states, “A person is physically qualified to drive a commercial motor vehicle if that person has no loss of a foot, a leg, a hand, or an arm, or has been granted a skill performance evaluation certificate...” *Note that digits are not cited.* Regulation 40 CFR 391.41 (B)(2) further notes, “...has no impairment of a hand or finger which interferes with prehension or power grasping...”

If the CDME determines the candidate is significantly impaired, but otherwise meets all other physical requirements, the CDME may medically certify the driver with the stipulation that the driver obtain a SPE as required in 49 CFR 391.49. A SPE must be performed by a Board Qualified or Board-Certified physiatrist or orthopedic surgeon.

The focus of your evaluation is on function, particularly strength and dexterity in this case. Hand grip should be objectively evaluated with a dynamometer or sphygmomanometer. The CDME determines if the severity of a deficit of less than a hand or foot warrants an SPE certificate. Thus, if the CDME is satisfied that the candidate can demonstrate reasonable strength, sufficient to manipulate the steering wheel, and adequate dexterity to operate controls, an SPE is not necessary, and the driver can be cleared for up to two years without regard to the amputation.

*CFR = Code of Federal Regulations.

Case 2: ITDM Driver with Hypoglycemic Event

A CDME writes: “I received a call from a trucking company safety manager about one of the company’s interstate commercial drivers with insulin-treated diabetes mellitus (ITDM). The driver was started on insulin 6 months ago and was able to get a 1-year card from another CDME three months ago. The driver was found by another driver at a truck stop, in the cab of his 18-wheeler, and was disoriented. He was given orange juice by EMTs and the disorientation resolved. The EMTs reported his fingerstick glucose at 50, prior to the OJ. The safety manager wanted to know what was required prior to returning this driver to work.”

Truck Stop Thoughts: The Federal Motor Carrier Safety Administration (FMCSA) announced a regulatory change for ITDM drivers, effective Nov 19, 2018. This regulation revision permits individuals with (1) a STABLE insulin regimen, and (2) properly controlled ITDM to be qualified to operate commercial motor vehicles in interstate commerce. The rule changes the qualification process to involve the CDME and the individual's Treating Clinician (TC).

The regulatory change is discussed in detail in the Federal Register 83 FR 47486-47521 accessible at <https://www.federalregister.gov/documents/2018/09/19/2018-20161/qualifications-of-drivers-diabetes-standard>. FMCSA posted a "New Diabetes Standard Overview" webinar on 11/21/2018 accessible at: <https://www.fmcsa.dot.gov/regulations/medical/new-diabetes-standard-overview-webinar>.

Mild hypoglycemic symptoms can include tachycardia, sweating, weakness, or hunger. Severe hypoglycemic symptoms can include seizure, loss of consciousness, need for assistance from another person, or impaired cognitive function occurring without warning.

A commercial driver operating in interstate commerce is prohibited from operating a commercial motor vehicle (CMV) after a severe hypoglycemic episode. The driver must report the episode to and be evaluated by a Treating Clinician "as soon as is reasonably practicable." The driver is prohibited from operating a CMV until (1) evaluated by a TC, (2) the TC determines that the cause of the severe hypoglycemic episode has been addressed, and (3) the driver again has a stable insulin regimen and properly controlled ITDM.

The FMCSA protocol for this situation states that "once the TC completes a new MCSA-5870/Insulin-Treated Diabetes Assessment Form following the evaluation, addressing the cause, and re-establishing a stable insulin regimen and ITDM is properly controlled, the individual may resume operating a CMV."

The MCSA-5870 form can be downloaded at:

<https://www.fmcsa.dot.gov/regulations/medical/insulin-treated-diabetes-mellitus-assessment-form-mcsa-5870>.

Please note that the CDME is not routinely involved in this return-to-driving protocol after a severe hypoglycemic episode. The rationale for this is discussed at length in 83 FR 47486-47521. **What are your thoughts about this regulatory change?** Send your opinions to Newsletter Editor Dr. Susan Upham at supham@roadrunner.com.

UPDATE on the FMCSA Medical Examiner Handbook The Medical Examiner Handbook, used by CDMEs for GUIDANCE on medical eligibility for clinical issues encountered during driver medical examinations, has been under revision for several years. The FMCSA Medical Review Board is scheduled to meet on July 15-16, 2019 to continue discussion of a DRAFT of the ME Handbook. A copy of the draft can be downloaded at: https://www.fmcsa.dot.gov/sites/fmcsa.dot.gov/files/docs/mission/advisory-committees/mrb/83401/fmcsamedicalexaminerhandbook_0.pdf

New England Members Achieving Fellowship Status at AOHC 2019...



Dr. Manoj Moholkar, is originally from India. He went to Grant Medical College/University of Mumbai where he earned his medical degree. Subsequently, he completed a residency at UMass Memorial Center, Worcester, in Internal Medicine and later completed a fellowship in Occupational and Environmental Medicine at Mount Sinai Medical Center, New York. He also obtained a Master's in Public health/environmental occupational health at the University of Massachusetts at Amherst prior to entering residency. Dr. Moholkar has special interests in work fitness, wellness and disability issues. Dr.

Moholkar has 19 years of experience in Occupational and Environmental Medicine. He also moonlighted in urgent care on the weekends. Currently, he is a Physician Advisor for Occupational Health Centers of the southwest, Texas. He performs utilization reviews/determinations of medical necessity for the clinical requests for workers compensation patients. He also performs Independent medical examinations. He was a Medical Director/Occupational Health physician at Reliant Medical Group, Occupational health, in Worcester, Massachusetts for 12.5 years. He is board certified in Occupational Medicine and Internal Medicine. In addition to his practice, he is a delegate in the ACOEM's section of Health and Human Performance. He is also on board of directors of NECOEM.. In 2016, he authored an article about "pre-employment screening for nicotine" in the NECOEM newsletter.



Jacqueline Cook, MD, MPH, FACOEM is an Assistant Professor of Medicine at the Yale University School of Medicine, and currently serves as the Medical Advisor and Headquarters Medical Review Officer for the Veterans' Health Administration Office of Occupational Safety and Health. Dr. Cook earned her medical degree from New York Medical College and completed both her internal medicine residency and occupational and environmental fellowship at the Yale University School of Medicine, before assuming the position of Chief of Occupational Health Services at the VA Connecticut Healthcare System, and later transitioning to her current role as a Medical Advisor at the national level earlier this year. Dr. Cook also serves on the Board of Directors for the New England

College of Occupational and Environmental Medicine and is a delegate for New England on the ACOEM House of Delegates.



New Fellows Drs. Moholkar, Saito, Cook and Hix



Drs. Buchta and Lundquist

Mickey and Minnie Welcome ACOEM



**The NECOEM Baseball Outing:
Drs. Moore, Lundquist, Cook,
Moholkar and Dena Stetson, NP**



**Dianne Plantamura and
Dr. Berube**

Answers
to Colors
of OEM
Quiz:

- 1: D
- 2: K
- 3: L
- 4: G
- 5: F
- 6: E
- 7: B
- 8: H
- 9: J
- 10: I
- 11: C
- 12: M
- 13: A

Colors of OEM:
Can you find the best match?

Test Your OEM Knowledge

1. Carbon Black
 2. Purple-Blue or Blue-Gray
 3. Pink Disease
 4. Rose Eye
 5. Green Tongue
 6. Black Foot Disease
 7. White (related to Raynaud's)
 8. Chocolate-Brown
 9. Blue Workers
 10. Cherry Red
 11. Violet
 12. White/Yellow Phosphorus
 13. Reddish-Brown
- A. Nitrogen Dioxide
 - B. Vinyl Chloride
 - C. *Chromobacterium subtsugae* strain PRAA4-1 (a biological insecticide)
 - D. Increased risk of bladder cancer
 - E. Arsenic
 - F. Vanadium
 - G. Airborne Selenium
 - H. Color of blood due to methemoglobinemia
 - I. Elevated carboxyhemoglobin
 - J. Exposure Risk: Anilines, nitrobenzenes, quinones
 - K. Burton line = Lead line
 - L. Mercury
 - M. Phossy Jaw

answers on previous page

New England College of Occupational and Environmental Medicine

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The New England College of Occupational and Environmental Medicine is a not-for-profit regional component society of the American College of Occupational and Environmental Medicine whose mission is to provide leadership to promote the optimal health and safety of workers, workplaces, and environments by: educating health professionals, employers, employees, payers, and the public; encouraging research and the development of new knowledge; championing the highest possible quality of OEM practice; guiding workplace and public policy; and advancing the field of occupational and environmental medicine