



# National EMS Network Newsletter

## Update: Good, Bad and Ugly of the Covid-19 Pandemic

by Stephen Naylor Ph.D.

### 1. Introduction

We have all suffered over the past eighteen months from the trauma, trials and tribulations of the Covid-19 pandemic. The first case officially reported in the USA was on January 19, 2020 when a 35-year-old man was diagnosed in Washington State with Covid-19. The World Health Organization (WHO) declared the SARS-CoV-2 virus infection a pandemic on March 11th, 2020. Today (November 2021) there are approximately 250 million individuals worldwide that have been infected with SARS-CoV-2 resulting in approximately 5.2 million deaths. In the USA about 47 million people have been infected and close to 750,000 individuals have died from the SARS-CoV-2 virus (see <https://coronavirus.jhu.edu/map.html>). The outcry over the effects and consequences of the pandemic has grown voluminous, and origins of the SARS-CoV-2 virus are now hotly debated. Most of the scientific community has suggested that the infection occurred via zoonotic (animal to human) transfer from bats, possibly via another animal (e.g. pangolin) to humans. More recently, a growing number of individuals have argued that SARS-CoV-2 was (accidentally) released from the

Wuhan Institute of Virology in China (WIH). In either case, no definitive data exists to confirm or refute the origin of the virus.

A more pressing matter over the past twelve months has been the development of safe and effective treatments for Covid-19. The Trump administration initiated the “Warp Speed” program in which the Federal Government subsidized the rapid development of vaccine products against SARS-CoV-2. This was followed with a successful rollout by the Biden administration of three different vaccine products developed by Moderna, Pfizer-BioNTech, and Johnson and Johnson. To date, about 192 million Americans have been fully vaccinated, representing approximately 58% of the population (see: <https://ourworldindata.org/Covid-vaccinations?country=USA>). This has resulted in a precipitous drop in infections and mortality in the USA. However, this remarkable and successful effort is being challenged by the emergence of SARS-CoV-2 variants (also known as mutations). All infectious viruses can mutate as they undergo their insidious life cycle inside the human host. This can result in new viral strains that may be more contagious, transmissible, or deadly. The current concern is that such a situation may be developing now with SARS-CoV-2 variants. These emerging variants may not be as effectively treated with existing vaccines.

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The scientific and clinical communities have made significant progress in understanding how SARS-CoV-2 infects humans. Indeed, to date, there have been over 200,000 scientific/clinical papers published on SARS-CoV-2/Covid-19 in the past 21 months! This virus is one of the most widely studied infectious agents in history, given the condensed period of time. The remarkable complexity of how this virus infects and sickens humans is now much better understood. This has led to the development of effective therapies such as antibodies and vaccines. However, the subtleties and wide-ranging impact on children, young adults, and the elderly are now better recognized and characterized. In children a symptomological variation was identified and named Multisystem Inflammatory Syndrome (MIS-C). In some adult patients who had recovered from the original infection, a secondary set of symptoms referred to as “Long-Haul Covid” was manifested. The past 18 months has seen good, bad and ugly developments as the Covid-19 pandemic

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## KEEPING THE NEMSN BOAT AFLOAT: YOUR GENEROSITY SOUGHT

The good ship NEMSN relies solely on you to cover our general expenses, keep our website as friendly and informative as possible, conduct Board member elections and produce and distribute the organization's newsletter. Regarding the latter, the Board of Directors expects to complete three newsletters in the next half-year. We plan to share a wealth of information regarding COVID-19 and EMS survivors and conduct elections to fill seats on our Board. A current, solid funds balance will facilitate getting all of this done. But when the dust settles from these activities, our balance will have been diminished notably. So you have an opportunity through a contribution of whatever amount to keep the NEMSN boat afloat.

In 2021, NEMSN has received just under \$1,000 in contributions from members and others. We are hoping to add you to the following list of those who have already helped out in 2021.

### **\$1-\$99:**

JULIE ANN ALLENDER; VIVIAN HOLMES; SUSAN LUTTRELL; DAYNA TOLLEY; and JERRY YORK.

### **\$100 or more:**

NETWORK FOR GOOD; GINA PAROLA-MEYERS; JULIE PAROLA SIM; and BETTY PORTER/LESLEY FISHER

NEMSN is particularly grateful to Betty Porter and Lesley Fisher for encouraging family and friends to make contributions to our organization in memory of Evalyn Fisher (please see a related memorial on Evalyn in this newsletter). Likewise we're grateful to Nancy Arnett Campbell for setting up a Fundraiser via the Facebook-based mechanism for donations, Network for Good. Thank you to everyone for sharing your tax-deductible dollars with us.

Making a contribution to NEMSN is NOT complicated. Just send a check to the following address and the organization will follow-up with a thank you and a record for filing with your 2021 taxes:

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# Treatment of Eosinophilia Myalgia Syndrome with Osteopathic Manipulative Medicine:

## Interview with Kim Sing Lo, D.O.

*Kim Sing Lo, D.O. is board certified in Osteopathic Manipulative Medicine (OMM) by the American Osteopathic Association. He was in private clinical practice in New York City from 1994 until his retirement in 2015, rendering hands-on Osteopathic Manipulative Treatment (OMT) to a large assortment of patients with different medical conditions. Dr. Lo has also held several teaching positions. He served as Assistant Professor of OMM at the Kirksville College of Osteopathic Medicine in Kirksville, Missouri (the world's foremost institution of osteopathic medicine) from 1991-92. From 1992-94 he was Assistant Professor at the New York College of Osteopathic Medicine. Besides that, he has taught osteopathic intern physicians and students at Lutheran Medical Center in Brooklyn, NY. Dr. Lo was a recipient of a 1990 research grant from Burroughs Wellcome and Mead Johnson to study the effects of OMM on patients with fibromyalgia. Dr. Lo is a member of NEMSN's Medical Advisory Board, and has demonstrated the effectiveness of OMM in the treatment of EMS patient symptoms.*

*Since the 1989 epidemic, EMS patients have struggled with post-epidemic symptoms that can be overwhelming and debilitating. Very few effective treatments exist and some, like corticosteroids, can provide transient relief. However, sustained use of such drugs can lead to additional non-EMS complications. One possible alternative option is the use of OMT. This is not widely known or understood as a possible treatment for EMS and its myriad of assorted symptoms. Dr. Lo has practiced OMT for over 20 years, and NEMSN interviewed him on September 14, 2021, in order to gain more insight and understanding into the potential benefits of OMT in treating EMS patients. At various points Dr. Lo offers very technical information for any readers who want to acquire an in-depth understanding. The interview has been edited for brevity and clarity.*

### 1. What is OMM?

**Answer:** OMM is the abbreviation for Osteopathic Manipulative Medicine, and treatment protocols are referred to as Osteopathic Manipulative Treatment (OMT). The American Osteopathic Association defines OMM as "... the [study of the] interrelated unity of all systems in the body, each working with the other to heal in times of illness". In addition, the Philadelphia College of Osteopathic Medicine, suggests OMM "... is a comprehensive approach to health care in which osteopathic physicians (DOs) apply osteopathic philosophy, structural diagnosis and the use of OMT in the diagnosis and management of patients".

As a D.O. of many years standing, I would prefer a simpler definition of OMM. First and foremost, the physician must utilize appropriate OMT techniques to maximize the patient's own healing potential and must consider the patient's own body intelligence. What do I mean by "body intelligence"? Our bodies have the ability to regulate homeostasis automatically. Friendly or hostile exogenous input to the body will elicit an automatic response. The body (host) protects itself. For example, if you ingest substances such food, chemicals, inhalants or drugs that are not acceptable to the host, your body will find ways to expel the "toxic" substance through the gastrointestinal tract or integumentary system (which includes the skin and associated organs). In a similar manner, if I, as an OMT physician, apply inappropriate force to your tissue, the body will respond with more tension locally or elsewhere. Hence, I humbly "listen" (or respond) to these subtle signals, and allow the body to continue the self-healing process aided by my more subtle interactive contact with the patient.

### 2. What are some of the different techniques of OMT?

**Answer:** We have many different types of OMT techniques. OMT techniques can be differentiated into two categories and are categorized as direct or indirect. The direct technique attempts to correct dysfunction by approaching the physiological barrier with direct force. An example is a high velocity low amplitude (HVLA) technique, namely the famous "popping and cracking" technique. It involves a quick adjustment for vertebral or articular restriction. Both patient and provider may get instant gratification, or fear, from the "popping and cracking" sound during adjustment. This technique carries a higher risk of injuring the patient, especially the vertebral artery in upper cervical spine adjustment. However, when correctly performed it is a very safe and effective technique for headache, brain fog and temporomandibular joint syndrome.

The indirect techniques may involve much more time and only very gentle force. The indirect techniques use an activation force, a gentle force applied by the physician's hands, opposite to the physiological barrier. One of these techniques, the muscle energy technique, is a typical one used in OMT. We use the Golgi tendon reflex mechanism to relax the muscle that is holding up the physiological barrier by providing force away from the latter. This approach is both very effective and offers minimal risk to patient.

Consider an acute traumatic injury with lots of muscle spasm. A direct technique, such as HVLA, may correct the acute articular restriction and may restore normal range of motion immediately. But the acute traumatic injury may also benefit from indirect techniques such as muscle energy technique. If the indirect techniques of craniosacral or myofascial release can provide a similar result with minimal risk to the patient, then the direct technique may not be necessary, in my experience.

It is important to pick the appropriate techniques for the particular patient, since this will bring about a more optimal response by the patient's body.

### 3. In your experience can OMT be used to treat EMS patients?

The short answer is yes, but with caution and consideration. I have learned from experience to rely on the feedback coming from the patient's body, in general, and from the EMS patient's body in particular. I rely on a moment-to-moment analysis of what is happening to the EMS patient's body, determined by what my hands on the patient are sensing. I have had to learn not to do too much, but to do the appropriate amount of manipulation. It has been very important to be careful not to over manipulate the patient's system but to give the right amount of treatment so that the body can accept and make use of the treatment. I learned with EMS patients that the amount of treatment they can tolerate might be smaller than what the typical patient can tolerate. It can be humbling for the doctor and patient alike to realize the healing potential in even very difficult physical situations. With the right amount of treatment, the patient is physically relaxed and has less discomfort immediately at the end of a session. The patient's own healing systems will be expressed afterward, to their potential and at their own pace, during the following days after an OMT session.

It is important to recognize that EMS patients are a unique subset of individuals who can benefit from OMT. The response of EMS patients to the same OMT techniques is different compared to approximately 95% of non-EMS patients treated by me. I have been asked specific questions about EMS patients in the past, such as the following. Are EMS patients hypersensitive to treatment? Are they less responsive to treatment? Or are they just more delicate and their body is only able to handle a small dose of treatment? Is their autonomic nervous system less responsive after direct spinal or joint adjustment?

In order to contemplate such questions, it might be useful to consider a known common medical situation. A good analogy is an obese patient recovering from a significant stomach bypass or removal surgery. If the patient starts eating before the intestinal tract is properly healed, this will cause an adverse reaction and assorted complications of the surgery. The desire of the patient to eat a "normal sized" meal is due to memory and behavioral conditioning, pre-surgery. If this patient then tries eating a smaller portion, say 25% of what he/she used to eat, then still has bloating or abdominal discomfort, cutting this small 25% meal to an even smaller portion should eliminate the symptoms. This action-response-action-response situation is similar to that practiced in OMT, but the difference is that in OMT the action-response is occurring "in real time" during an OMT interaction between the patient and the physician. The physician is constantly adjusting treatment, depending on how the patient's body's reactions feel to the physician's hands.

Another problem for EMS patients is the difficulty in recognizing that their musculoskeletal and immune systems are significantly compromised. EMS patients may require a much longer period of time to recuperate from any physical stress than people without EMS do. Too much treatment by the physician may cause similar side effects and may hinder healing. In my opinion, the EMS patient's overall condition may be likened to that of a fragile newborn baby. All their organs, tissue, physiology and anatomy are working but are compromised in efficiency. Newborn babies will grow and mature, and it is similar with EMS patients. Consider the fact that a newborn baby vomits if it drinks more than the stomach is able to handle. Analogous situations occur with someone with EMS. In the case of EMS patients, recognizing the problems and limitations of one's own body and then working with a physician using OMT may offer a gradual, but real, progression back towards some semblance of a productive and enjoyable life.

### 4. How does OMT work?

**Answer:** In the more conventional medical world, mechanistic considerations of how a therapeutic approach works is considered paramount. In the world of OMM a more holistic consideration is brought to bear. I cannot explain all of OMM in terms of basic mechanistic descriptors, but I do know that OMT facilitates the body's needs.

Every time I treat a patient in general, or an EMS patient in particular, there is a very real metaphysical connection between that patient and me. The patient's body directs me to apply the appropriate amount of contact at the skin or the body's inner structures. Again, I am a humble servant carrying out the patient's silent body commands.

We do understand elements of OMT and how it works. One example would be techniques in the craniosacral treatment repertoire to improve cerebral spinal fluid (CSF) and cranial venous flow. If the patient achieves better CSF and cranial venous flow, mental alertness will increase and brain fog will decrease. In a craniosacral approach, I am really talking about CSF production in the ventricles and absorption through the cranial venous system. Anatomical considerations to be considered include the jugular foramen and foramen magnum. Any significant muscular or articular tension in the suboccipital area will impede CSF flow between the cranium and the rest of the spine. We know our nerve fibers are very sensitive to any chemical or electrical composition changes. If the suboccipital area is tight, then vertebral arteries, which serve as a back up supply from the posterior cranial, fossa may be affected. Cranial nerves IX, X, XI and jugular vein exit through the jugular foramen. Hence cranial venous return may slow down. Cranial venous congestion is expected. Brain fog is a possible result. Occipitomastoid suture restriction from temporal bone dysfunction is a common finding. If you palpate deeply on the soft tissue of the occipitomastoid suture, this

area is usually tender or painful to palpation. There are techniques to release cranial suture restriction. These treatment techniques require a gentle touch and then a waiting period for the body to respond.

## 5. How is OMM related to the human Immune System?

**Answer:** Psychoneuroimmunology is the latest branch of science that is helping to unravel the mind, body and immune system connections. The glymphatic system of the central nervous system highlights the significance of normal cerebrospinal fluid, CSF, and cranial venous flow with lymphatic drainage. The adrenal hypothalamic connection also has indirect influence on the immune system. *[Editor: Distinct from the lymphatic system, the glymphatic system "is a network of vessels that clear waste from the central nervous system (CNS), mostly during sleep". Much more information at <https://neuronline.sfn.org/scientific-research/understanding-the-glymphatic-system>.]*

I have not looked into the scientific detail of myofascial connections with the immune system. It is my understanding that immune cells are everywhere at the fascial level. Any abnormal stimulation from the nervous system to the fascia can trigger an unwanted local immune response. Most osteopaths that use the craniosacral approach believe that "the artery is supreme but CSF remains in control". *[Editor: The fascia is a type of connective tissue that extends from head to toe to provide support and protection to your muscles and bones. Myofascia is a particular type of fascia that surrounds muscles, and provides a strong support for the muscles, while at the same time allowing for flexibility.]*

## 6. Does OMT affect the Immune System?

It is a simple question, but it's not so simple to answer. So before I answer, it is important to understand what the autonomic nervous system (ANS) and immune system response (ISR) do within your body. The ANS is part of your peripheral nervous system that helps control many of your physiological processes such as heartbeat and blood pressure. It has three components, namely the sympathetic nervous system (controls activity and attention -- think of the fight or flight response), the parasympathetic nervous system (controls rest and digestive processes) and the enteric nervous system (controls primarily digestive processes). The ISR helps protect your body against microbial invaders such as bacteria and viruses. It consists primarily of the Innate IST (white blood cells such as eosinophils that kill microbes) and adaptive ISR (B and T cells that both produce and help antibodies in your blood stream). Recently it has been shown that there are clear connections between your ANS and ISR. In particular, the acute activation of the sympathetic nervous system attenuates the innate immune response.

Now back to the question. I know from experience that

my patients have been less prone to infection and have recovered from infection quickly. Both the ANS and ISR have been regarded as systems that cannot be easily influenced by treatment. However, as mentioned earlier, the activation of the sympathetic nervous system damps down the innate immune response. Thus, I believe that OMT facilitates the normalization of excessive autonomic input to the innate immune system by eliminating vertebral or fascial restriction. Thus a normal autonomic response will have influence on the adaptive immune system. In summary, yes, I believe OMT can affect your ISR, albeit in a somewhat indirect way, via the ANS.

## 7. For patients who have suffered from EMS, do you know if their immune systems are either immunocompromised or overactive?

**Answer:** I don't have any scientific data to conclude that patients who have suffered from EMS are either immunocompromised or that their immune systems are overactive. I could speculate based on my experience of treating a very limited number of EMS patients. As noted before, my patients didn't have more than the normal viral, bacterial or other opportunistic infections once I started treating them. I couldn't say if they were immunocompromised. Their central nervous systems may have been overactive. As mentioned earlier, it could be easy for an OMT doctor to over-treat patients with EMS. If this occurs, patients end up with more discomfort and pain the following week. I learned how to avoid negative responses by cutting down the amount and intensity of treatment. Patient reports confirmed this for me.

I've found with EMS patients whom I've treated and also with those I've been in touch with via NEMSN communications, that people remember what their healthy body systems were like before getting sick and expect to get back to their "normal". After being stricken with EMS they find that their physical abilities have dropped to such a low point that they, and also even I as a physician, can almost not believe it. If they then try to do all the same physical things they used to do, or even if I give them the amount and intensity of treatment that a person without EMS would benefit from, the result would be a temporary increase in pain and bodily dysfunction. Once the patient learns to not try to do too much physically, as I always try to listen to the patient's body more in order to give the appropriate amount of treatment, the patient may start making substantial progress.

## 8. For patients with EMS, fibromyalgia and autoimmune disease what can OMT do to alleviate symptoms?

**Answer:** As I explained previously for patients with EMS, I would start with short craniosacral treatment sessions or myofascial treatment sessions until I understood the amount of treatment appropriate for that particular patient. *[Editors Note: Dr. Lo explains that myofascial release treatment is a gentle contact to*

the patient's body made in order to sense the direction and pulling of the fascia or myofascial tissue. Gently matching up or exaggerating the fascia or myofascial pulling force, based on the body's response to the touch, usually will elicit relief locally or in a bigger area of the body]. For those who exercise, I allow them to continue doing the physical exercises they like, but they should only do only 25% of the duration and intensity of their usual workout. If this is still too much, they must cut another 50%. If the patient still has problems at this point, the person must stop all exercises until treatment starts offering some relief. The bottom line is to find the appropriate level of exercise that will not add more fatigue or agony to their body. Again, the physician must remember that it is possible to over exert the patient with osteopathic treatment. The physician must respect the fragile body system of the EMS patient. Once both the patient and the doctor accept this fact, finding the appropriate amount of treatment is more readily attainable.

Fibromyalgia patients have a different problem. They frequently exhibit postural imbalance. They have repetitive trauma from abnormal posture. The prolonged use of cell phones and computers is a major factor to address. Most osteopathic treatment techniques are helpful for the fibromyalgia patient. Craniosacral technique for CSF and cranial venous flow frequently improve the quality of sleep. Exercises also help to decrease fatigue and pain. Finally, I have not treated enough autoimmune disease patients to make any further comment.

### **9. For patients suffering from “Long Haul Covid-19” would your treatments be different from how you would treat those same patients who have not had Covid-19?**

**Answer:** First of all, please note that to date I have not treated any “Long Haul Covid-19” patients and cannot provide you with any actual experiences. What I tell you below is just my opinion. Any Long Haul Covid-19 patient and physician providing OMT should consider these suggestions.

My preliminary examination and interactions with a Long Haul Covid-19 patient would be the same as with any other patient. I would think about the same treatments considered for other patients, based on their symptoms. This is assuming that the Long Haul Covid-19 patient can tolerate treatment sessions, which typically may take 45 minutes or more. Having said that, Long Haul Covid-19 patients have some specific issues to address. A more careful examination of individual cranial bones is prudent. For example, the Covid-19 issue of not being able to smell and taste needs more careful assessment, plus treatment to the cribriform plate, crista galli, ethmoid bone, frontal bone, falx cerebri, falx cerebelli, and tentorium cerebri, besides making sure the CSF and cranial venous flow are smooth and adequate. Brain fog, headache and dizziness may improve with these treatments. Also, as I mentioned earlier, attention must be paid to

the suboccipital area, which is important to improve lymphatic and venous return to the vascular system. Less tension in the suboccipital area will result in less soft tissue tension on the carotid and vertebral arteries.

If the patient has pulmonary issues after Covid-19 or Long Haul Covid-19, I would make sure the temporal bones are in normal motion. Let me explain. When you breathe, the movement of the joint between the sphenoid bone and the occipital bone, and the midline bones including the sphenoid, occiput, ethmoid, and vomer all undergo flexion and extension during inhalation and exhalation. This in turn is coordinated and responsible for the external and internal rotation of the pair bones in the cranium. Osteopathic physicians believe temporal bones can indirectly affect the rib cage motions. Direct treatment techniques applied to the mid-thoracic area may normalize the sympathetic innervation tone to the respiratory system. In addition, the release of the occipitomastoid suture to minimize irritation on the vagus nerve is also important to consider. This ensures proper parasympathetic innervation to the lung and gastrointestinal tract. Finally, both Covid-19 and Long Haul Covid-19 patients can benefit from craniosacral treatment to clean up any residual inflammation by providing a more normal CSF flow and less venous congestion in the central nervous system.

### ***Dr. Lo, NEMSN thanks you for sharing your information, thoughts and experience!***

To find a physician trained in cranial techniques that Dr. Lo recommends for EMS patients, go to <https://cranialacademy.org/> or to <https://www.jamesjealous.com/additional-resources/physician-directory>

(Please note the opinions expressed in this article are solely those of Dr. Lo and do not necessarily reflect the viewpoint of NEMSN. Readers should consult their own physicians if concerned about immunocompromised/over-active immune situation and Covid-19/Long-Haul Covid-19.)

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### **Response to Dr. Lo Interview by EMS Patient Lois Vierk**

I have suffered chronic pain and EMS symptoms with no respite for many years. At the time of the epidemic my symptoms were relatively manageable but in 1998 an unexpected, impactful, and debilitating attack occurred, leaving me with chronic pain and decreasing physical function. Unfortunately, for the next 18 months I found no help or understanding from the myriad of physicians consulted.

Finally I arrived at Dr. Lo's office in New York City in September 1999. By that time I was wracked with pain day and night, I was dizzy and short of breath, I sometimes had trouble swallowing, and I'd suffered a cognitive dysfunction. I went to see Dr. Lo basically to

satisfy the insistence of my husband and family to "try everything" before giving up. My husband's family (in Florida) related to me that they had found help for back pain from a local OMT physician. This doctor, in turn, told me that a former professor of hers, namely Kim Sing Lo, D.O., was a practicing physician in New York City, close to my home in New Jersey. I went to see Dr. Lo, with very low expectations, convinced this would be yet another fruitless trip to yet another indifferent doctor.

Dr. Lo listened carefully to me as I described my symptoms. (This already was different from the other doctors I'd consulted.) He observed how stiff my physical movements were. He was kind, compassionate and thoughtful. He told me to lie down on the treatment table. I don't remember how long that first session lasted but I have to guess about 45 minutes. The manipulation, done in large part to my head, was gentle yet I sometimes could feel a gentle tingling sensation flowing down to my legs and feet, even though the doctor was touching only my head. I didn't know what was happening, but it felt like there was movement within the body where there had been nothing but stagnation before Dr. Lo's ministrations. It was somewhat surprising, but my body felt very relaxed after the treatment.

Dr. Lo suggested that I return in a week. I made the next appointment, glad that something had happened within my body, though I didn't know yet if it would ultimately be helpful or not. I don't recall exactly what that first week between appointments was like. I continued to come back weekly though. After a short time one horrible symptom, namely a constant burning pain inside the skull on the top of my head, went away completely. This symptom hardly ever comes back. The next symptoms that were alleviated, over more time, were constant shortness of breath, difficulty swallowing and the intractable dizziness that had plagued me for a year and a half. These symptoms gradually lifted and disappeared, and they hardly ever return now.

As a patient with chronic EMS it feels to me like the body constantly wants to tighten up. OMT does not cure this but certainly makes the tightening temporarily go away. I still get symptoms anywhere, from head to toe -- leg cramping, internal cramping in my chest and abdomen (which feels like torture), pain at the top and at the bottom of the spine, tingling neuropathy in arms and legs, dreadful trouble sleeping, stiffness anywhere, the list goes on. Dr. Lo's treatments would always loosen up the body and I would walk out of his office in much less pain, with all symptoms turned down, and feeling in a much better mood. In order to keep the effects of treatment for as long as possible, and as strongly as possible, I've learned to do supplemental things. I take it easy for the rest of the day after treatment. A nap is good. I do no physical exercise that day and spend little time typing at the computer. I drink a lot of water, especially in the hours right after OMT. Usually the night after osteopathy is my best night's

sleep for the week. Then starting the next day I begin exercising. Over the years I've depended on swimming and walking, augmented with anything else to relieve tightness, such as stretching exercises and a particular breathing discipline, which all help to relax the body. It's been hard to learn how much exercise to do and even after all this time I still don't always get it right. Too much exercise can bring on a painful attack but too little allows the pain and stiffness to quickly take over again.

Some symptoms go away forever after OMT treatment. The underlying EMS body tightness always returns however, with various manifestations. I get treatment weekly, even now. It's comforting to know that once again, treatment will bring down the pain and other debilitating symptoms. After finding Dr. Lo and OMT I was able to get rid of all my pain medications over a period of perhaps three years or so.

I went to Dr. Lo until he retired in 2015. Currently I'm fortunate to be seeing another OMT doctor in New York City who also helps me greatly. I know of another epidemic EMS patient who has seen this same doctor and also reports benefits from OMT. On the way to getting settled with my current doctor I visited a number of other OMT physicians. They were all different in the techniques they used to treat my symptoms and pain, but I benefitted from each physician's work on me. One of these doctors shared with me that before moving to the East Coast, she had treated approximately a half dozen EMS patients who had been newly diagnosed after ingesting commercially available supplements.

I count myself lucky to have stumbled onto OMT, and I'm grateful to the physicians who have treated me over the years. Dr. Lo and his OMT colleagues have changed my life and made living with my pervasive EMS symptoms much more bearable. Conventional medicine failed me, but OMT, through the efforts of Dr. Lo and others, provided an alternative approach to treating EMS.

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## Osteopathic Manipulative Treatment and Other Immune Related Diseases Including Long Haul Covid:

### Interview with Dr. Kim Sing Lo, Part II

**Editor:** *The current newsletter contains another article on Covid-19 and a brief introduction to Long Haul Covid. In the next NEMSN newsletter there will be a more lengthy article on Long Haul Covid including symptomology and potential treatments. However, in this current interview with Dr Lo we asked specifically about Long Haul Covid and other immune related diseases and how OMT can be used in the treatment of such patients. Therefore we hope that you will find this second interview with Dr. Lo informative and useful as*

*you continue to deal with EMS-related symptoms, and other immune related disorders. In the first interview, Dr. Lo discussed some aspects of OMT and EMS, but in this second discussion he addresses the more practical issues of OMT application to patients with problematic Immune Systems.*

### **1. Do you have any experience dealing with patients suffering from autoimmune disorders such as Multiple Sclerosis?**

**Answer:** I have treated a small number of Multiple Sclerosis (MS) patients. I have mentioned previously that my initial approach to any patient is to consider each one as a “blank slate” irrespective of their condition. However, I do obviously consider any pre-existing conditions in my follow up sessions by paying more attention to disease specific areas of interest. For instance in MS patients the brain and myelin sheath are obvious points of concern and focus. Symptoms that manifest in dysfunctional areas may be a significant obstacle for the body to regain balance (called homeostasis) and start the healing process. The myriad of autoimmune diseases affect different tissues, organs and can be systemic. As previously mentioned MS provides more insults to the nervous system; thus craniosacral treatment is the ideal technique to use on such patients. Normal cerebrospinal fluid (CSF) production, absorption and flow is important to provide optimal nutrient supply and to remove any waste products due to inflammatory processes in the Central Nervous System (CNS). The CSF circulates in a closed space and its subtle flow dynamics depend on rhythmic brain expansion and contraction. The combined nuanced cranial bones and brain movement interactions are critical for uninterrupted CSF flow. OMT practitioners have been able to detect the subtle brain expansion and contraction by hand for many years. It is interesting to note that recently scientists have observed (using powerful magnetic resonance imaging instrumentation) the same respiratory driven brain movements reported by OMT physicians.

Treatment techniques for MS patients will depend on a number of factors. Is the patient in an acute flare up? Does the patient need just maintenance treatment? Does the patient need more symptomatic support? Although craniosacral treatment is the primary approach, it is important to communicate with the patient’s body as well as set realistic expectations for the patient, thus ensuring less likelihood of failure. In acute MS flare-ups, it is likely that the patient is experiencing inflammatory or residual inflammatory responses impacting the nervous system. The craniosacral system is likely in a more dynamic state. This means the amplitude of cranial expansion will be significant, in that it may be faster than normal. “Calming” the craniosacral system will help to more rapidly decrease inflammation. However, a slower but adequate amplitude and rate of brain expansion is necessary to ensure proper CSF flow. An experienced osteopath will fine-tune the cranial rhythmic impulse to an ideal level at the end of each

session. Of course, proper cranial venous drainage is also vital for optimal CSF absorption. Occipitoatlantal joint dysfunction is another critical area that affects CSF dynamics. Specific cranial bone dysfunction correction will facilitate better craniosacral movement. A good cranial venous sinus release technique will usually lessen tension in the dura around the foramen magnum, congestion in the cranial venous sinus system and pressure in the cranium. Symptoms like headache, fever, fatigue, neck stiffness and anxiety will improve. Frequently, patients will sleep better after treatment. If an MS patient has vision problems, then checking ocular muscle tension is important. Note that dysfunction or tension in the lesser wing of the sphenoid can add stress to the optic nerve. However, the occipital lobe of the cerebrum requires more careful evaluation using my hands. Balance of the cranial reciprocal tension membrane (falx cerebri and tentorium cerebelli) is necessary. Sometimes, tension from the cerebellum below the tentorium cerebelli may be a factor. MS patients who have balance problems can be helped by temporal bone dysfunction correction, unless there is already nerve involvement. Finally, if an MS patient comes in for maintenance treatment, temporal bone dysfunction is a vital checklist item. The temporal bone is usually the “trouble maker” of the head. If the temporal bone has no dysfunction, CSF flow and cranial venous sinuses drainage are usually adequate, hence MS symptoms may be under better control.

OMT may be of use in the treatment of other autoimmune diseases. For example I have treated a patient with Sjogren’s disease [*Editor’s Note: In Sjogren’s syndrome, the mucous membranes and moisture-secreting glands of your eyes and mouth are usually affected first — resulting in decreased tears and saliva.*] The patient reported no dry eyes, dry mouth or lung problems, but occasional joint pain and fatigue. I recommended meditation along with myofascial release. I do not believe that OMT can cure any autoimmune disease, but certainly can provide symptom relief for a variety of such wide-ranging disease conditions.

### **2. Currently a significant percentage of the US population is suffering from LHC. The situation is compounded by the fact that the medical community neither fully understands the cause of LHC nor can provide effective treatments. Some peer-reviewed literature suggests that LHC is related to Post Viral Syndrome (PVS), which in turn has been related to Chronic Fatigue Syndrome (CFS). How do you think OMT can be applied to patients with LHC, or PSV or CFS?**

**Answer:** My experience with PVS and CFS and PVS patients is also limited. I have treated a number of patients for muscle pain after a cold or acute viral episode. I treated them with OMT, usually with a combination of direct spinal adjustment and quick myofascial release. Typically, each patient recovered quite well and did not require a follow up visit. I also



treated a small number of CFS patients that visited me on a regular basis. However, in my opinion their osteopathic dysfunction didn't change much even though they reported improvement. Fibromyalgia patients also have a significant amount of fatigue and pain. I suspected that the systems of these patients were overwhelmed by long-term stress, and possible non-confirmed viral infection, compromising their hypothalamic-pituitary axis. These patients reported less pain and less fatigue after OMT therapy.

LHC is obviously a topic of great interest at the moment, since so little is known about this complex condition. I cannot speculate about the possible relationship of LHC and PVS. However, my experience suggests treating LHC as soon as possible before the patient reaches a condition similar to CFS. How would I treat LHC with OMT? Based on LHC symptoms reported by the CDC and peer-reviewed journals, fatigue and muscle weakness are most common along with shortness of breath. If I compare LHC symptoms with pituitary insufficiency, there are some overlapping symptoms. I suspect those LHC patients with fatigue and muscle weaknesses have a low amplitude and rate of movement in their cranial rhythm. Unfortunately, I have not had the opportunity to treat LHC patients. However, in my opinion it is important to consider that the normal physiologic motion of spheno-basilar synchondrosis (SBS) is the key to all healing. Compressions of the fourth ventricle (CV4) will improve the amplitude and the rate of movement of the craniosacral rhythm. Please note that the CV4 technique requires caution in pregnant patients. This technique can potentially induce unwanted uterine contraction if the patient is not ready for labor and delivery. Temporal bone balance will enhance temporal lobe movement and influence the lateral ventricle production of CSF. Decreased cranial venous congestion almost always improves brain fog. Occipitomastoid suture dysfunction correction will decrease tension in the jugular foramen. Vagus nerve is important innervation to the lung and gastrointestinal tract. Phrenic nerve originates from spinal nerve (C3-C5) is the primary motor supply to the respiratory diaphragm. Occipitoatlantal joint release will insure proper CSF flow between the cranium and the spine. Your medulla oblongata is located at the base of your brain, where the brain stem connects the brain to your spinal cord. It plays an essential role in passing messages between your spinal cord and brain. It's also essential for regulating your cardiovascular and respiratory systems. Dysfunction of the occipitoatlantal joint also produces tension to medulla.

LHC patients with shortness of breath will need additional evaluation of the neck, lower six ribs, and T7 – L3. Note that the superior diaphragm origin is continuous from the xiphoid process anteriorly to inner aspects of the lower six ribs of the thorax, laterally to the 11th and 12th ribs, and posteriorly to the lumbar vertebrae of L1, 2 (left), L1-3 (right). The lower six ribs articulate directly with the corresponding thoracic vertebrae. The relationship of the sternocleidomastoid

muscle, Sibson fascia and apex of lung may have bearing on shortness of breath in LHC patients. The respiratory diaphragm is attached to the lower six ribs and indirectly to the lower six thoracic vertebrae. The crura of the diaphragm attaches to as far down as the third lumbar vertebrae via the crura. Any dysfunction in T7 to L3 and lower six ribs can affect the mechanics of the respiratory diaphragm. If the LHC patient was intubated and put on bed rest for a long period of time, any dysfunction at the thoracolumbar junction and lower six ribs should be corrected in ICU or as soon as their physical condition allowed. Proper rib cage and respiratory dynamics may require less pressure from ventilator to expand the lung. Medical care providers often overlook the significance of the pelvic muscular diaphragm upon pulmonary vital capacity. A stiff pelvic diaphragm will descend less during respiratory diaphragm contraction. A more dynamic pelvic diaphragm will allow more efficient respiratory diaphragm contraction and rib cage expansion, thus facilitating ease of breathing.

The cranial reciprocal tension membrane balance is significant in LHC, with smell difficulties often a symptom. Olfactory bulbs which rest on cribriform plate of the ethmoid bone receive stimuli from the olfactory nerves. The axis of the ethmoid, sphenoid and vomer bones plays a key role in any dysfunction of the upper jaw (maxilla bones) and can significantly affect primary respiration. Tension in this area will also affect the cribriform plate and proper olfactory nerve healing. Congestion will delay clean up from any inflammatory reaction in this area. I believe if we address these areas early after diagnosis of LHC, then patients may recover much faster.

Finally, one aspect of LHC patients that I didn't address was the psychological trauma from fear of death and potential permanent physical disability during the initial Covid-19 infection, aftermath and LHC. Trauma from intubation may cause non-physiological vertical strain patterns in the cranial mechanism. We have seen patients with difficulty falling asleep at night and with brain fog for several weeks after general anesthesia for surgery. A gentle balance of the cranium, the occipitoatlantal joint release with cranial venous sinus release, will usually help patients back to a better mental status. Occasionally, the fascia of the mediastinum is affected. The hyoid bone, all attached muscles and prevertebral fascia of the cervical spine would need rebalancing with the mediastinum to restore proper rib cage dynamic. In summary, I believe OMT can play a significant role in helping LHC patients by helping to alleviate symptoms and hasten the pace of recovery.

(Please note the opinions expressed in this article are solely those of Dr. Lo and do not necessarily reflect the viewpoint of NEMSN. Readers should consult their own physicians if concerned about immunocompromised/over-active immune situation and Covid-19/Long-Haul Covid-19.)

## The Good, Bad and Ugly *Continued from Page 1*

continues to ravage and impact us all.

### 2. Origins of SARS-CoV-2 Pandemic

The scientific literature and media reported in early 2020 that SARS-CoV-2 originated in the city of Wuhan, Hubei Province, China. Conspiracy theories notwithstanding, it was suggested that the virus originated from the “local” bat population and was transferred to humans via another animal species like the pangolin (a scaly anteater). Chinese health authorities noted in either mid-November or early December 2019 (the exact dates are disputed), that there were a small number of unusual infections in Wuhan. An alert was subsequently sent to the World Health Organization (WHO) on December 31, 2019. The Chinese authorities shut down the city of Wuhan, which has frequently been labeled as “ground zero” for the pandemic outbreak. However, subsequent retrospective analyses of blood-donor samples revealed that patients in the United Kingdom and Italy had been infected as early as September 2019, and in the USA as early as December 2019. In addition, Peter Forster of the University of Cambridge published a phylogenetic (comparative genetic map) analysis indicating that the virus did not originate in Wuhan, but in Shenzhen (Guangdong Province, China), where a bat was captured with 96% homology (identical genetic sequence) to the SARS-CoV-2 virus. Whilst the origins and timelines are still uncertain, there was a general consensus that bats were the original source of the virus and zoonotic transfer was the mechanism of infection. This was predicated on the fact that years earlier, a similar infectious agent, the SARS-CoV-1 virus (origin-believed to be bats via civets to humans), caused the SARS outbreak of 2003 resulting in 8,422 infected individuals, and a fatality rate of 11%. Also, the 2012 MERS-CoV viral outbreak (origin-believed to be camels) infected a total of 2,494 patients with a fatality rate of approximately 25%. Other zoonotic viruses include rabies, Hantaviruses, yellow fever virus, hemorrhagic fever virus, Zika virus, Rift Marburg and Ebola viruses, and monkeypox virus, to name but a few examples, thus providing a strong scientific precedent for zoonotic transfer of SARS-CoV-2.

The Chinese government has displayed an intransigency and opaqueness with regard to the origins of the Covid-19 pandemic. This has fueled distrust and stoked concerns that the SARS-CoV-2 virus actually escaped from the Wuhan Institute of Virology (WIV). Initially, such claims were more geographically motivated. However, in May 2021 a group of eminent scientists wrote to the journal *Science* calling for a thorough and objective investigation into the origins of the SARS-CoV-2 virus. They wrote that

more careful fact gathering needs to occur, and the “accidental laboratory release” theory needs to be given equal consideration. Simultaneously science writer Nicholas Wade wrote an objective, carefully researched paper suggesting that the evidence supported accidental release of a modified virus (known as a Gain-of-Function virus) that became known as SARS-CoV-2 (see <https://thebulletin.org/2021/05/the-origin-of-Covid-did-people-or-nature-open-pandoras-box-at-wuhan/>). There is a growing belief in the scientific community and in the media that the virus came from the WIV. However, there is no direct, substantive evidence that such an event occurred. The same statement can also be made about possible zoonotic transfer of SARS-CoV-2. Thus the debate continues to simmer, and it is possible we may never know the full truth. What is important to recognize is that all of us were woefully underprepared for such an event. It is also imperative moving forward that infrastructure is put in place now for what is an inevitable next pandemic

### 3. Vaccine Success & Failure

**A. Success:** Vaccines are the gold standard for prevention and treatment of viral infections. Almost all of us have been subject to vaccination throughout our lives. As a child you might have received the Measles/Mumps/Rubella as well as the Polio vaccine, and many adults get an annual Seasonal Flu vaccine. Vaccines typically contain the actual infectious agent that causes the disease. The challenge is to ensure that the vaccine does not harm the recipient, but elicits an immune response to produce antibodies against the pathogen. In order to achieve this goal, the patient usually receives a dead or weakened, less virulent virus. More recently, new approaches using specific strands of DNA or RNA found in the pathogen have been used in order to further minimize the potential of the vaccine to cause an inadvertent patient infection. These types of approaches have been used to develop our current SARS-CoV-2 vaccines. The considerable advantage of such vaccines is that they actually prevent the infectious agent pathology, without the danger of the patient becoming sick. In addition, the vaccine confers some patient immunity that can last from months to years.

There are currently 91 ongoing clinical trials worldwide for a vaccine against SARS-CoV-2. In addition, 22 vaccines have been approved in various countries for use to prevent SARS-CoV-2 infection (see <https://www.raps.org/news-and-articles/news-articles/2020/3/covid-19-vaccine-tracker>). Not all 22 vaccines are available in the USA. For example the Sputnik V, Sputnik Light (both Russia) and CoronaVac (China) vaccines were rushed through sparsely regulated clinical trials. The

FDA deemed these trials as questionable and non-rigorous and classified the vaccines as unacceptable. In the case of the Oxford University-AstraZeneca vaccine some adverse patient reactions were observed in clinical trials. This stopped the FDA from approving this vaccine for use in the USA, but it is widely available in Europe and around the world.

The development of a vaccine can typically take years. But in the USA, given the exigent circumstances and a remarkable partnership between private companies and federal government, three different vaccines were developed in only 18 months. The FDA issued Emergency Use Authorization (EUA) in early 2021 for the Pfizer-BioNTech, Moderna and Johnson & Johnson/Janssen (J&J) vaccines against the SARS-CoV-2 virus. In August 2021 the FDA granted full approval for the Pfizer-BioNTech vaccine use in adults, Moderna has completed a request for full approval, and J&J predicts full approval by the end of 2021. The rollout of the vaccines under EUA led to an initial significant decline in the number of daily infections because about 191 million Americans (close to 58% of population) have now been fully vaccinated.

The three vaccines and their safety and efficacy status are described below:

**i) Moderna Vaccine:** This is a novel mRNA vaccine. It does not contain any part of the original living virus, and thus you cannot get Covid-19 from this vaccine. A strand of mRNA is used to make a harmless, individual piece of the virus known as the “Spike Protein”. Your immune system then makes antibodies against this decoy spike protein. If or when the real virus infects you, the new spike protein antibodies your body has produced recognize and interact with the SARS-CoV-2 spike protein, rendering the virus inactive. This vaccine is given to you as an injection into the muscle. You must receive two vaccine doses administered one month apart. If you are immunocompromised, it is recommended that you receive a third dose of the vaccine at least one month after the second dose. Studies have shown that this vaccine and its route of administration is extremely effective leading to 94-96% protection efficacy of the patient. All the data indicates that this vaccine is extremely safe. However, patients have reported injection site reactions, which can include swelling (hardness), redness and pain, tenderness and swelling of the lymph nodes in the same arm of the injection. More general side effects can include fatigue, headache, muscle pain, joint pain, chills, nausea, vomiting and fever. There are anecdotal reports that these adverse responses can be more severe in EMS patients. In addition, severe side effects have been reported in a very small portion of the population (less than 0.01%) and include an allergic

response to the injection, myocarditis (inflammation of the heart muscle) and pericarditis (inflammation of the lining outside the heart).

**ii) Pfizer/BioNTech Vaccine:** This vaccine was given full approval by the FDA and is now known and marketed as the Comirnaty vaccine. Please note this is identical to the “old” Pfizer-BioNTech vaccine. When a drug/vaccine is fully approved (rather than by EUA) by the FDA, then, by convention, a commercial name is given to the drug/vaccine, in this case Comirnaty. Comirnaty is also an mRNA vaccine and works in an identical manner as described above for the Moderna vaccine. This vaccine is also given to you as an injection into the muscle. You receive two vaccine doses administered three weeks apart. If you are immunocompromised, it is recommended that you receive a third dose of the vaccine at least one month after the second dose. Studies have shown that this vaccine and its route of administration is also extremely effective, leading to 92-94% protection efficacy of the patient. The safety profile of this vaccine is very similar to that of the Moderna vaccine, with injection site discomfort and other adverse effects, as described in more detail above. For patients still considering vaccination against SARS-CoV-2, there is little to differentiate the Pfizer-BioNTech and Moderna vaccines, with the exception that Pfizer-BioNTech has moved more effectively through the bureaucracy in dealing with the FDA in gaining full approval of their vaccine.

**iii) Johnson & Johnson (Janssen) Vaccine:** This vaccine is different from the Moderna and Pfizer-BioNTech vaccines. In this case a viral vector (Adenovirus 26) has had its DNA genome altered to express the aforementioned spike protein found in SARS-CoV-2. This viral vector (manner in which the DNA is delivered) cannot replicate inside your body but it forces your own cells to produce a version of the spike protein, which your body then produces antibodies against. This vaccine is given to you as an injection into the muscle. However, in this case only a single dose of the vaccine is required. No recommendations have been provided or recommended for immunocompromised patients. Studies have shown that this vaccine and its administration protocol is less effective than the Moderna and Pfizer-BioNTech vaccines with a 70-80% protection efficacy of patients. Recently Johnson & Johnson reported that a second dose of their vaccine leads to approximately 90% protection efficacy of patients, comparable to the two mRNA vaccines. An FDA advisory panel recommended in mid-October 2021 that a second shot of the Johnson & Johnson should be administered at least two months after the first shot.

The safety profile of the Johnson & Johnson vaccine is somewhat different from the other two vaccines. Injection site reactions include pain, redness of the skin and swelling. In addition, general side effects can include headache, fatigue, muscle aches, nausea, fever, swollen lymph nodes, paresthesia, tinnitus, diarrhea, vomiting, and allergic reactions. There is a remote chance that this vaccine can cause blood clots and low platelet levels, particularly in women aged 18-49. This condition has typically manifested one to two weeks after vaccination. Finally, Guillain Barré Syndrome (a neurological disorder in which the body's immune system damages nerve cells, causing muscle weakness and sometimes paralysis) has occurred in some people who have received this vaccine. In most of these people, symptoms began within 42 days following administration of the vaccine. The chance of having this occur is exceedingly low. In addition, please see the FDA website which contains much more information on the three vaccines (<https://www.fda.gov/consumers/consumer-updates/learn-more-about-Covid-19-vaccines-fda>).

**B. Partial Failure:** The development and rollout of the three Covid-19 vaccines is without a doubt one of the major success stories of the pandemic. This bright light on an otherwise bleak tapestry of pandemic experiences has been somewhat sullied by the lack of clarity on Covid-19 vaccine booster shots. It is important to consider what happens to you once you have received your vaccine. As discussed above, your body produces antibodies against SARS-CoV-2 that protect you from further infection, but for how long? In the case of a polio vaccine, protection is afforded for a lifetime of immunity. However, it is unclear at the present time as to how long the three Covid-19 vaccines confer protection on an individual. In addition, the SARS-CoV-2 virus is continually mutating to produce new variants (see below), and it is unclear how effective the current vaccines are against some of the more recent variants such as Delta, Mu and Nu SARS-CoV-2 viruses.

The consideration of if, when and why an individual should possibly receive a booster vaccine shot is clearly very complicated. Also, public health officials are trying to make difficult decisions, even though missing key data and information about the current three approved Covid-19 vaccines. However, the media, public health officials, local, state and federal government and regulatory agencies such as the FDA and CDC have all contributed to a comedy of errors in terms of "advice" provided to the public. For example, Dr. Rochelle Walensky (Director of CDC) recently overrode a CDC Advisory Panel on the suitability of a Pfizer-BioNTech booster shot for frontline workers. President Biden recently made media headlines

on receiving his booster shot. This was in direct contradiction to a published manuscript in the premier medical journal The Lancet. The authors of this article argued, "Although the idea of further reducing the number of Covid-19 cases by enhancing immunity in vaccinated people is appealing, any decision to do so should be evidence-based and consider the benefits and risks for individuals and society". They provided data supporting their premise and concluded, "This is a compelling issue, particularly as the currently available evidence does not show the need for widespread use of booster vaccination in populations that have received an effective primary vaccination regimen".

More recent data suggests that booster shots may be required six months after receiving your initial vaccination regiment. Pfizer reported earlier this month that the effectiveness of the Pfizer-BioNTech (a.k.a. Comirnaty) vaccine in preventing infection by the SARS-CoV-2 virus dropped to only 47% from 88% six months after the primary vaccination event. They concluded that "...the drop is due to a waning efficacy, rather than more contagious variants". In a separate Israeli study, it was demonstrated that in the month of September daily average infections dropped from 11,000/day down to 4,000/day. This significant drop was attributed to a nationwide "trailblazing booster jab program" initiated in July of this year. Given the poor, inconsistent messaging and the confusing plethora of poorly informed opinions, as well as conflicting scientific data, how can an individual make a rational decision about getting a booster vaccine shot? Fortunately, the CDC has now provided clear guidance to the US population.

**C. Current CDC Booster Recommendations:** Current guidelines and recommendations by the CDC provide detailed information on booster vaccine shots (<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/booster-shot.html>). Recent studies have shown that the effectiveness of the vaccines against SARS-CoV-2 diminishes over time. In addition, albeit in a small clinical trial involving the Pfizer-BioNTech vaccine, a booster shot clearly increased patient immune response against SARS-CoV-2. Therefore, the CDC recommends that i) patients 65 years of age and older; ii) patients 18 years old and older with underlying medical conditions such as cancer, diabetes, heart disease and other conditions; iii) patients 18 years of age and older working or living in a high risk setting where the individual meets numerous people each day (first responders, educators, grocery store workers and others) should all receive a booster vaccine shot six months after receiving their original vaccination. Adverse events associated with the booster shot were similar to that of the primary vaccination. Fatigue and pain at the injection site were the most commonly

reported side effects, and overall, most side effects were mild to moderate. Also, it is important to consider that more serious side effects are possible, albeit rare. Please note that the FDA has now issued an EUA for booster shots of all three vaccines from Moderna, Pfizer-BioNTech and Johnson & Johnson.

In late October, after the issuance of the three EUAs, the CDC announced that you can “mix and match” your booster shot. This means that a patient who receives a second (if the initial vaccine shot was from Johnson & Johnson) or third (if initial two shots were from either Moderna or Pfizer-BioNTech) dose can choose any one of the three vaccines as a booster. For example, the CDC authorized the Johnson & Johnson booster shot for people older than 18 years of age, at least two months after the initial shot, and it can be either another Johnson & Johnson dose, or the mRNA vaccines from Moderna or Pfizer-BioNTech. Any person over 65 years of age, or patients with underlying conditions can qualify for a half dose Moderna, or a full dose Pfizer-BioNTech booster shot. However, please note the data is sparse on the effectiveness and safety of the “mix and match” booster program. You are advised to be careful in such choices and consult fully with your physician.

**D. Other than Vaccines:** The primary focus on derailing the Covid-19 pandemic in the USA has been the development and rollout of the three vaccines discussed above. Vaccines act as prophylactics in preventing SARS-CoV-19 infection. However it is important to understand that there are other FDA approved therapeutic drugs now available for the treatment of Covid-19. They include the following:

**i) Remdesivir (Veklury™ – Gilead)** is a broad-spectrum antiviral medication, used in the treatment of Hepatitis C. The FDA approved its use in the treatment of hospitalized Covid-19 patients. Patients are administered Remdesivir intravenously under the supervision of a physician. It should be noted that the WHO issued a recommendation in November 2020 against the use of Remdesivir for treating hospitalized Covid-19 patients. In that same time period the FDA issued an EUA for a combination therapy of Remdesivir and Baricitimib.

**ii) Molnupiravir (Merck):** In October 2021, Merck released promising study results about an oral antiviral drug to treat Covid-19. Compared to placebo, this antiviral drug significantly reduced the risk of hospitalization and death in people with mild or moderate Covid-19 who were at high risk for severe Covid. If the FDA authorizes or approves this drug, Molnupiravir will be the first Covid-19 treatment that can be taken by mouth early in the course of infection

to reduce disease severity. Merck recently filed an EUA with the FDA for use of Molnupiravir against Covid-19.

**iii) Monoclonal Antibodies** are fabricated versions of the antibodies that our bodies naturally make to fight invaders, such as the SARS-CoV-2 virus. Three monoclonal antibody treatments for Covid-19 have been granted EUAs by the FDA. The treatments may be used to treat non-hospitalized adults and children over age 12 with mild to moderate symptoms who have recently tested positive for Covid-19, and who are at risk for developing severe Covid-19 or being hospitalized for it. All three of the FDA-authorized therapies attack the coronavirus's spike protein, making it more difficult for the virus to attach to, and enter human cells.

The monoclonal antibody treatments that have EUA approval are: a combination of casirivimab and imdevimab, called REGN-COV, made by Regeneron; a combination of bamlanivimab and etesevimab, made by Eli Lilly; and sotrovimab, made by GlaxoSmithKline. These treatments must be given intravenously in a clinic or hospital. These treatments are not currently authorized for hospitalized Covid-19 patients or those receiving oxygen therapy. Monoclonal antibodies did not benefit people whose immune systems had already created antibodies in response to the virus. However, a pre-peer reviewed study, published in June 2021, showed promise for monoclonal antibody treatment in hospitalized Covid-19 patients who did not mount their own immune response. Monoclonal antibodies also can be used in combination with corticosteroids, such as dexamethasone, to dampen the immune response in very ill hospitalized patients. Finally, the FDA has granted EUA for tocilizumab (Actemra), a monoclonal antibody that blocks the action of IL-6, and thereby dampens the exaggerated immune system response found in Covid-19 patients.

#### 4. Dangers of Virus Variants

A new wave of Covid-19 cases has recently swamped the US Health Care System, in the midst of an extremely successful rollout of the vaccine program. What is causing this latest disappointing and demoralizing situation? Public health officials point to the emergence of the new, highly transmissible “Delta SARS-CoV-2 variant”. A variant occurs when the viral particle (known as a virion) infects your cells, hijacks your DNA/RNA machinery and makes approximately 1000 new copies of the virus. In that process mistakes are made in the replication of the new virus particles at the RNA and protein synthesis levels. Upon release of the new variants (also known as mutations) from the infected cell, many of the individual virus particles are dysfunctional and die very quickly. But a very

small number have been changed to confer new and advantageous biological properties that allow them to survive and thrive in their human host.

**A. SARS-CoV-2 Variants:** The SARS-CoV-2 virus has produced thousands of variants throughout the pandemic period. However, only those variants that have adverse effects on human health give rise for concern. In the USA, variants are classified as follows: i) Variants being monitored (VBM); ii) Variants of Interest (VOI); iii) Variants of concern (VOC); and iv) Variants of High Consequence (VOHC). Currently, there are no SARS-CoV-2 VOHC in the USA. The preponderance of variants found in the USA are classified as VBM. Although a number of them, including the Alpha, Beta, Gamma, and Epsilon were originally classified as VOC, they have since been downgraded to their current level. Only one variant, namely the Delta variant, is classified as VOC. A variant is classified as VOC if there is evidence of an increase in transmissibility, more severe disease (e.g., increased hospitalizations or deaths), significant reduction in neutralization by antibodies generated during previous infection or vaccination, reduced effectiveness of treatments or vaccines, or diagnostic detection failures.

**B. SARS-CoV-2 Delta Variant:** In December 2020, the Indian health authorities announced the detection of a new SARS-CoV-2 variant, subsequently named the “Delta variant”. This variant was dominant in India by March 2021 and led to a catastrophic second wave of Covid-19 infections and deaths. Genomic analysis of the Delta variant revealed that changes in the spike protein of the virus had occurred. These modest changes had profound effects. The Delta variant is much more contagious than original SARS-CoV-2 virus. For example, it was estimated that an individual with the original strain would infect 2.5 other people, whereas the Delta variant would spread from one person to about 4 other people. In other words, the Delta variant is twice as contagious as the original virus. Preliminary data also indicates that it causes more severe illness than other variants in unvaccinated individuals.

The Delta variant was first detected in the USA around March 2021. By the end of July 2021, it had become the dominant variant in the USA, with close to 99% of new cases caused by this viral strain. This resulted in a fourth wave of Covid-19 infections in the USA beginning early July. For example, in late June the 7-day moving average of reported cases in the USA was 12,000/day and by July 27th daily average had ballooned to about 60,000/day. Once again this led to state and local medical facilities being overwhelmed

(see: <https://Covid.cdc.gov/Covid-data-tracker/>).

Dr. Anthony Fauci (US Covid-19 Taskforce member, and Director of NIAID at NIH) recently stated that unvaccinated people are 41 times more likely to be hospitalized, and 57 times more likely to die due to the spread of the Delta variant.

The CDC has stated that the unvaccinated population “remains the greatest concern”. Individuals in this sizeable group are more likely to get infected, and therefore transmit the virus to others. Fully vaccinated individuals are at a significantly reduced risk of infection by the Delta virus. However, it is possible for a “breakthrough” infection to occur, and those people who have been vaccinated and infected can spread the virus, but it appears much less efficiently. The current vaccines (discussed above) are effective in providing protection against the Delta variant, but at a somewhat lower efficiency. The CDC notes that the Moderna and Pfizer-BioNTech vaccine effectiveness dropped from approximately 90-95% to approximately 65% once the Delta variant became the dominant strain in the USA.

**C. Delta Variant and EMS Patients:** The Delta variant is still the dominant Covid-19 infectious agent in the USA. However, current daily numbers indicate that the fourth wave spike has peaked and is now in decline. Many public health officials suggest that this “boom and bust” model may continue as new variants emerge. But consideration of the UK trajectory of the Delta variant indicates that a different, more troubling model may threaten the USA. In the UK, the Delta variant caused a rapid rise in Covid-19 cases followed by a fast deceleration, and then a subsequent rebound to a markedly increased plateau of daily new infections. In addition, the virus continues to mutate and potentially produce new and more deadly infectious strains. Currently the WHO and CDC are monitoring the Mu variant that emerged out of Columbia earlier this year. This viral strain has been detected in the USA, but does not appear to possess properties that enable it to displace the Delta variant. However, will the next mutation do so?

EMS patients have to consider the many health risks posed by the current Delta variant as well as the possibility of other emergent viral strains. All the available information suggests that individuals who are more elderly, have high-risk comorbidities (referring to the presence of one or more health conditions a person has along with the original diagnosed “primary” disease) and problems with their immune systems should get vaccinated. In addition, the CDC suggests that if your initial vaccine program was longer than six months ago, it may be prudent to get a booster shot. Finally, as a high-risk patient, one should monitor the

possible emergence of other SARS-CoV2 strains and ascertain what the defined status of such a variant is, as defined by the CDC. You can quickly and conveniently obtain information at the CDC website (see: <https://www.cdc.gov/coronavirus/2019-ncov/variants/variant.html>).

## 5. Summary

The past 12 months has provided all of us with numerous challenges associated with the life-altering and life-threatening Covid-19 pandemic. The situation has brought out the good, bad and ugly in all of us, from the individual to the Federal Government and associated institutions. This has included:

**A. Good:** i) Three vaccines have been developed and approved (through an EUA or full approval) in a record setting time period of 18 months. ii) Approximately 191 million Americans have been fully vaccinated. iii) After the vaccine rollout there was a precipitous decline in infections and death rates. iv) The vast majority of individuals complied with mask mandates and practiced recommended social distancing guidelines, adhering to public health policy criteria rather than to politically motivated exultations of “defend personal liberty”. v) Over 200,000 scientific and clinical peer-reviewed papers were published on SARS-CoV-2, providing significant new, comprehensive insights into the pathobiology of Covid-19.

**B. Bad:** i) More Americans have now died due to Covid-19 (about 750,000) than died in the 1918-19 “Spanish Flu” pandemic (about 675,000). ii) Poor, irresponsible rollout of diagnostic testing for Covid-19 patients. iii) Confused messaging of whether patients should receive a vaccine booster shot. iv) Sizeable and entrenched anti-vaxxer subpopulation cohort, leading to potential continued rolling waves of Covid-19 infections. v) Emergence of new SARS-CoV-2 variants are more transmissible and less treatable with current vaccines, leading to new spikes in Covid-19 infections.

**C. Ugly:** i) Due to both political and biological factors, Covid-19 will be with us for many years to come, somewhat akin to the “Seasonal Flu” phenomenon. ii) The relaxing of mask wearing, social distancing and other recommended public health measures lead to wave-after-wave of new Covid-19 infections that overwhelm the medical care facilities. iii) Politicization of SARS-CoV-2 origins, mask wearing, vaccines, or the purported “hoax” of the Covid-10 pandemic have all contributed to the overall poor response of the USA to the Covid-19 pandemic and to one of the highest death rates in the world. iv) No clear plan/message has been articulated as to how to finally break the destructive wave-after-wave phenomenon in the USA. This can

lead to a perpetual upsurge-downturn cycle of Covid-19 infections and potential new more deadly variants. v) There appears to be no movement on the part of State or Federal Government to preempt the next pandemic, and incorporate what has been learned from the good, bad and ugly of the current pandemic.

(Please note the opinions expressed in this article are solely those of the author and do not necessarily reflect the views of NEMSN. Readers should consult with their personal physicians as to how to manage the prevention and treatment of Covid-19, as well as about their vaccine decision-making.)

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## Covid Vaccinations and EMS Patients

It would be of interest to all of us if you would share your experiences with the Covid vaccines. By telling the NEMSN Board which vaccine you received and your reaction to that particular vaccine, you give us information we could then pass on to other EMS patients. Your privacy will be protected and your name and contact information will not be shared. You could also tell us if you have chosen not to get vaccinated and why. You can email, phone or even send a letter through the US mail. Please take a few minutes to send us your story.

## Update Your Email and Contact Information

We need your email address! We’d like to be able to keep in touch better with our members and there’s also the option to receive our newsletters by email, if you prefer. We need any updates to your US mail address, too. Please email NEMSN at [Nemsntalk@aol.com](mailto:Nemsntalk@aol.com) or phone 201-868-5791. You can send us a letter - NEMSN, P.O. Box 4171, Monitor Station, West New York, New Jersey 07093.

## DISCLAIMER

The NEMSN does not engage in the practice of medicine or law and does not claim to have legal or medical knowledge. All persons should seek the advice of their own lawyer and medical professionals. Opinions expressed by individual writers herein are those of the writers and not necessarily those of the NEMSN Board of Directors or its committee or subcommittee heads, nor of the Editor. Information is intended merely to inform readers. Drugs and treatments and legal issues should be discussed with reader’s own physicians and attorneys.

## Other L-Tryptophan-Like Supplements to Avoid

by Stephen Naylor Ph.D.

The Eosinophilia-Myalgia Syndrome (EMS) epidemic of 1998-90 was caused by the consumption of contaminated Showa Denko L-Tryptophan. However, over the past thirty years there have been a number of sporadic patient reports of EMS-like symptoms from individuals taking other L-Tryptophan-like supplements. These include a number of patients who have self-reported through NEMSN, and this is detailed more in the article written by Nancy Grant and Lois Vierk entitled "Contacts from Epidemic Patients and Possible New EMS Cases" published in the NEMSN December 2019 newsletter.

**5-Hydroxytryptophan & Melatonin:** After the temporary withdrawal of L-Tryptophan due to the EMS epidemic, 5-Hydroxytryptophan (5-HTP) was promoted and marketed as a safer, superior replacement. The increased usage of 5-HTP and vigilance over the possible role of contaminants in EMS onset prompted a report in 1994 that three members of a Canadian family using 5-HTP manifested EMS-like symptoms. Analysis of the case-implicated product in 1994 revealed the presence of a unique contaminant, designated as Peak X. My research group in association with Dr. Gleich ultimately identified case-associated Peak X as 4,5-tryptophan-dione (4,5-TD) and detected its presence in a number of commercially available 5-HTP supplement brands. Our findings were subsequently confirmed by independent analyses carried out by the US FDA.

There have been numerous reports from a variety of sources, including NEMSN, that taking Melatonin can also cause EMS-like symptoms. In a clinical study in 1993, Melatonin was being evaluated as an anti-cancer agent, several patients developed eosinophilia. Based on these reports my group at Mayo Clinic analyzed three commercially available Melatonin supplements bought from a local pharmacy in Rochester, Minnesota. Analysis of these Melatonin tablets enabled us to determine the chemical structures of seven contaminants. The structural similarity to the case-associated contaminates found in Showa Denko L-Tryptophan was striking. Two of these contaminants were identified as Peak C (L-Tryptophan case-associated contaminant) analogs. The other Melatonin contaminants were identified as Peak E (L-Tryptophan case-associated contaminant) analogs.

**Chemical Structure of Contaminants:** The contaminants found in L-Tryptophan, 5-HTP and Melatonin all have complex names and chemical structures. The determination of these structures is both expensive and complicated. These efforts require access to analytical instrumentation that can cost millions of dollars and requires many years of specialized training. So why go to such efforts to determine the structures of these contaminants? The structure of a molecule, particularly a contaminant, can provide valuable insight into how disease symptoms such as those in EMS occur. In

other instances the structure and shape of a molecule determines how it interacts with the body. For example, everybody is familiar with the analgesic Aspirin, as well as the cholesterol lowering Statin drugs. These widely used chemical compounds have very different chemical structures and thus react with different parts of your body in order to bring about the effects we are all familiar with after taking them. The same principle applies to contaminants; by determining their structures it may be possible to unravel the mechanism by which they harm your body. Once we have such an understanding then it is both possible to prevent further damage as well as possibly treat the effects of the contaminant(s).

**L-Tryptophan, 5-HTP and Melatonin Same or Different?** All three supplements have been used to facilitate sleep, control weight gain, aid in the relief of depression and other assorted maladies. Many people who take L-Tryptophan, 5-HTP and/or Melatonin believe that they are unrelated, and very different supplements. So why has each one of these supplements been associated with EMS-like symptoms after consumption by individuals? Organic Chemists and Toxicologists would inform you that all three supplements are closely related based on their chemical structures. As an analogy, think about if you were evaluating three different houses, one of which will be purchased. All three houses have an identical foundation and structural framework. However, they differ in color and type of siding, window frames and door entranceways. Those minor changes can elicit very different responses from potential buyers, but to the building constructor they are essentially the same type of house with cosmetic changes

In the case of L-Tryptophan, 5-HTP and Melatonin the structural framework is identical, and consists of what organic chemists call an indole ring system. However, just like the house analogy, some of the appendages (called functional groups) are different. These minor structural changes determine how each of these compounds can react differently in the human body. But, L-Tryptophan, 5-HTP and Melatonin also react with other molecules in such a way that produces structurally similar contaminants that may induce identical symptoms of a disease like EMS. More recently, in 2015 a peer-reviewed case report entitled "Drug rash with eosinophilia and systemic symptoms caused by the dietary supplement Diindolylmethane" was published in the Journal of Allergy and Clinical Immunology. Diindolylmethane (DIM) is sold as a supplement for the potential treatment of hormone-related conditions, including acne, menopause symptoms, prostate issues, and certain forms of cancer. Please note there is no clinical evidence to support such overly optimistic claims for the use of DIM. In this case a 36 year-old woman presented with an itching, painful rash and facial edema after taking DIM. She was diagnosed with "Drug Rash with Eosinophilia and Systemic Symptoms" (DRESS). DRESS is a closely related eosinophilic mediated disease to EMS. The structure of DIM contains two indole rings joined together, and "coincidentally" resembles the structure of the case associated contaminant Peak E found in Showa Denko L-Tryptophan.

*Continued on Pg. 19*



## ELECTIONS 2022

There isn't a presidential election to be held soon. Most state and local elections, with some exceptions, are a year away. However, NEMSN has an election on the horizon. NEMSN's Board of Directors is made up of a maximum of nine volunteers. We currently have seven serving members and two vacancies. To serve on the Board and to vote in NEMSN elections, one must be an individual with an EMS diagnosis or a family member, caregiver, close friend or significant other of an individual diagnosed with EMS.

Six Board of Directors seats are up for election in March, 2022. That includes the seats of currently-serving members (George Bush, Jinx Engstrom, Rhonda Farro and Ann Flaherty) and two vacancies. Those who are currently serving must determine over the next few weeks if they prefer to seek another term of office. There is no limit on how many candidates there can be in any one election. However, only six can be elected. Terms of office are four years.

The bottom line is: WE NEED YOU. To seek election to the Board is NOT complicated. Just submit your name and a statement of your qualifications (no more than 100 words) to the address below by January 1, 2022. You can nominate another NEMSN member.....but they must verify they are willing to serve if elected.

In January of 2022, ballots with all candidates' names and statements will be sent to you. You will return those ballots with your choices by February 20, 2022. But for now, DON'T BE SHY OR RESERVED. THE NEMSN BOARD HAS THRIVED ON THE WORK OF MANY BOARD OF DIRECTOR VOLUNTEERS THROUGHOUT ITS HISTORY. It does require attending (by telephone) several meetings per year, communicating with NEMSN members and others, perhaps assuming duties as an officer or committee member, and infrequently drafting a newsletter article. NEMSN AND ITS MEMBERSHIP WOULD BENEFIT FROM YOUR PARTICIPATION. SO, PLEASE COMPLETE THE FORM BELOW AND SEND IT TO:

National Eosinophilia Myalgia Syndrome Network

Attn: Ann Flaherty

P.O. Box 4171, Monitor Stn.

West New York, New Jersey 07093

Or email your information to Ann Flaherty at [nemsntalk@aol.com](mailto:nemsntalk@aol.com).

### NEMSN BOARD OF DIRECTORS CANDIDATE

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY, STATE, ZIP \_\_\_\_\_

PHONE NUMBER \_\_\_\_\_

EMAIL ADDRESS \_\_\_\_\_

(On a separate sheet, please complete a maximum 100-word statement on your qualifications and send it in with this form. Thank you.)

## YOUR THOUGHTS AND IDEAS WANTED AND SOUGHT

NEMSN wants to hear from you! Please take a few minutes to tell us what you're thinking about regarding any of the topics below. You can tear this page out, write in your answers and send it via US mail to:

National Eosinophilia Myalgia Syndrome Network  
P.O. Box 4171, Monitor Station  
West New York, New Jersey 07093  
or email to NemsnTalk@aol.com or phone us at 201-868-5791.

### EMS MEDICAL ISSUES

Identify medical and/or health-related questions you feel should be put to NEMSN'S Medical Advisory Board. The responses would be shared in a future newsletter and/or on the website.

### GENERAL ISSUES AND ACTIVITIES

Please suggest an issue or an activity the Board of Directors ought to consider and address. Your suggestions will be discussed at future NEMSN Board meetings.

### THE NEMSN WEBSITE

Please make any suggestions or recommendations you might have for improving and strengthening the NEMSN website, particularly its format, content and user-friendliness. The Board is currently working on this matter and seeks your input.

### IDENTIFYING EMS SURVIVORS

Please lend us your assistance with the identification of other EMS survivors you may know and how we might contact them. The NEMSN Board does not assume that we are aware of or in contact with all survivors via our current mailing list.

## 2020 NEMSN FINANCIAL REPORT

Unlike delving into the particulars of the federal budget or the ledgers of large corporations, a reading of NEMSN's financial activities for 2020 is NOT complicated. Here's a quick read:

### EXPENSES:

Newsletter production and distribution	\$1,680
Website management and updating	\$ 153
General organizational expenses	\$ 68
<b>TOTAL EXPENSES</b>	<b>\$1,901</b>

### INCOME:

Balance at end of 2019	\$3,402
2020 Contributions	\$4,415
<b>TOTAL INCOME</b>	<b>\$7,817</b>

Income available minus expenses informs all of us that we started calendar year 2021 with \$5,916 in the bank. That's one of the organization's better starting balances in many years...a tribute to efficient spending and your generosity.

## Evalyn Fisher

August 27, 1943 – March 18, 2021

by Betty Porter

The New Year celebrations of 1988 found Evalyn with just about everything she could have hoped for in her life. She had a successful career as an award winning Interior Designer and college professor. She had travelled the world with plans to try to get to those last three pesky continents she missed (South America, Australia and Antarctica). By far the most exciting to her, she and her husband of twenty-four years were expecting their first child in the autumn.

By the close of 1989, most of that was in the rearview mirror. Her marriage ended bitterly and although her daughter was a smiling, laughing, joyous child, Evalyn's health was poor and she underwent open heart surgery which was followed by a long convalescence. Although she had help from her Mother and sister, Evalyn was under a great deal of stress. A psychiatrist recommended that she take a food supplement called L-tryptophan to help her get some sleep. As all of you reading this would know, Evalyn's life was changed forever.

She tried to work for five more years hiding her condition; trying to stand up straight against the constant pain. All the while she was securing the extra specialized medical care needed by both her daughter and her mother. But the EMS attacked her muscles, liver, lungs and skin and weakened her so much that she was unable to perform at a level high enough to continue working. She fought it like a lion. Her doctor helped her with exercises and physical therapy. They always tried to avoid drugs for as long as possible because her reactions to them were so severe and unexpected. She helped her mother live to ninety-two years of age. She helped her daughter find specialized



education to develop skills to accommodate her learning differences and to finish both her Bachelor's degree and her Master's degree in Psychology. When her daughter started practicing as a therapist, Evalyn couldn't have been prouder.

Evalyn was very appreciative of the information and advice she found through NEMSN. From Faith Rumph's emailing list Evalyn learned so much from the other people fighting EMS across the country. She was grateful to Faith for her knowledge and insight.

Evalyn is survived by: Lesley, her daughter; Sharon, her best friend since childhood; and me, her sister. We miss her like crazy, but we know that she is finally at peace and out of pain.

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## Other L-Tryptophan-Like Supplements to Avoid

*Continued from Pg 16*

All individuals should remember that L-Tryptophan, 5-HTP and Melatonin are very similar from a chemical structure perspective and this must be considered the next time you think about purchasing a supplement for personal consumption. Not only should you be cautious in considering the use of 5-HTP and Melatonin, but also any supplement containing an indole ring, as in the case of DIM.

(Please note the opinions expressed in this article are solely those of the author and do not necessarily reflect the views of NEMSN.)

· H A P P Y ·  
Holidays

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**National EMS Network Newsletter**

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