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Dear Doctor,

A treatment protocol that improves patient outcomes for chemically injured patients now exists. Neural sensitization often accompanies toxic encephalopathy induced by chemical exposure and leads to neurogenic inflammation of multiple organ systems. Neural sensitization can involve chronic, recurring symptoms from neurogenic inflammation in:

- **Respiratory System**: sinus, ear and/or throat pain, congestion and/or burning, as well as chronic or recurrent hoarseness, coughing, wheezing and/or shortness of breath
- **Blood Vessel Lining**: migraines, easy bruising, some cases of episodic hypertension with increased blood pressure with exposure, some cases of angina with increased anginal pain with exposure
- **Gastrointestinal Tract**: so-called "irritable bowel", nausea, bloating, acid reflux-like symptoms, diarrhea and abdominal discomfort
- **Genital Urinary Tract**: burning and/or irritation of the urethra, vulva, seminal vesicles and other urinary lining tissue, often with increased symptoms with exposure exacerbation
- **Eyes**: burning/irritation often with exposure exacerbation
- **Skin**: rash, often exacerbated with exposure, skin burning sensation

The blood vessel lining reduces blood flow to the brain, documented in toxic encephalopathy, and associated with confusion, dizziness, and problems with memory, concentration and/or attention span, "pins and needles" sensation. Numbness can also occur which can be a warning sign for stroke from severe hypoxia to the brain.

Understanding neural sensitization has greatly benefited from the research of Dr. Martin Pall, Ph.D (Professor of Biochemistry, School of Molecular Biosciences, Washington State University). Based upon research in neural sensitization, Dr. Grace Ziem, M.D., has developed a treatment protocol for neural sensitization, which helps the healing process for the above conditions. In addition, neural sensitization is often accompanied not only by increased symptoms from irritants and volatile compounds, but also other increased sensory response such as to light, noise, etc. The neural protocol utilized by Dr. Ziem contains FDA approved ingredients that are all substances that naturally belong in the body. This protocol is based on the biochemistry of neural sensitization and has successfully resulted in significant patient improvement in the above medical conditions and it lowered hypersensitivity to chemicals, light, noise, etc. It is essential that ENVIRONMENTAL CONTROLS BE MAINTAINED IN THE HOME, SCHOOL AND/OR WORKPLACE. Efforts to improve public accommodation with reduced environmental chemical use are also important.

The widespread inflammation of neural sensitization leading to inflammation in the above listed multiple organ systems leads to a widespread inflammatory process in the body, releasing immune and other inflammatory substances that result in chronic aching (sometimes diagnosed as fibromyalgia) and/or chronic fatigue (often diagnosed as chronic fatigue syndrome). It is likely that this widespread inflammatory process with ongoing release of free radicals leads to many of the types of organ systems damage, including those that have been described by Dr. Ziem in her papers of August 2001 and October 2003. Thus the neural protocol is not a preparation to "mask" or block neural sensitization symptoms, which may well be warning symptoms of damage to more silent organs, but rather a method to help heal a vicious biochemical cycle that perpetuates the ongoing release of free radicals that cause widespread inflammation and ongoing damage to multiple organs.

All components of the neural protocol are compounded preservative free. Please feel free to call Key Pharmacy for any questions.

USING THE NEURAL PROTOCOL

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Background:

Much recent research has documented specific biochemical changes in patients who have hypersensitivity to chemicals, often causing respiratory and other symptoms. The biochemical process that causes this is a vicious cycle occurring in the brain known as neural sensitization. Basically, there is increased nitric oxide production by various mechanisms. This excess nitric oxide then produces increased peroxynitrite, a very tissue-damaging free radical. Peroxynitrite leads to tissue damage and the formation of other free radicals in many tissues of the body, including increased inflammation in the respiratory tract, gastrointestinal and genital urinary tract, and lining of blood vessels, conjunctiva and skin.

Excess peroxynitrite is then converted into even more nitric oxide, unless the body has adequate substances to reduce peroxynitrite and substances to prevent this conversion to even more nitric oxide. The body uses an enzyme called SOD (super oxide dismutase) to prevent excess peroxynitrite from forming even more excess nitric oxide. SOD requires adequate amounts of the minerals zinc, copper and manganese.

This vicious cycle summarized above is described in more detail with scientific references, documenting that the cycle exists and the effectiveness of substances to control it. With this knowledge, there is a scientific basis for a neural protocol to dramatically reduce these body exacerbations from low dose chemical exposures.

Because there is no barrier (“blood brain barrier”) between the nose and the brain, substances breathed in can readily enter the brain as well as the lungs and the rest of the body. The neural protocol is designed to correct/treat the biochemical problem at its source. Left untreated, these changes lead to increased respiratory inflammation, with symptoms such as nasal congestion, sinus congestion and pain, hoarseness, coughing, chest tightness etc. These symptoms in response to low levels of chemical irritants are called reactive airway disease. It is a form of neurogenic inflammation caused by the biochemical cycle above. Unfortunately, neurogenic inflammation also affects the gastrointestinal tract, leading to increased permeability to larger food particles and the development of food intolerance. Symptoms resembling acid reflux also occur, and are not due to increased acid but rather increased inflammation. Increased genital urinary inflammation can cause pain in the genital area. When there is pain on passing urine, infection should be ruled out. Increased inflammation of blood vessels also occurs. This makes it harder to supply oxygen to vital organs such as the brain, heart etc. It also reduces blood flow to other organs, including but not limited to the skin, fingers and toes. Increased inflammation of the conjunctiva by this mechanism leads to a sense of "burning" in the eyes. Increased inflammation of the skin can also lead to symptoms of "burning", rashes etc.

Because the above-described inflammation involves so many body areas, affected persons often feel achy and fatigued. These are symptoms that accompany excess inflammation. This excess inflammation often lowers/depletes the body proteins and minerals, impairs immunity (reduced secretory IgA), adrenal disturbances, hormonal disturbances, and many other changes. These changes have been discussed in more detail in my papers of August 2001 and October 2003. I feel that a major factor producing those body changes is neural sensitization from chemical injury. It has been my experience with patients that the neural protocol used over time results in a dramatic reduction of this inflammation and thus a major reduction both in reactivity to chemicals as well as

greatly reduced aching, fatigue and other body changes significantly caused by the inflammation of neural sensitization.

Using the Neural Protocol

The neural protocol includes glutathione by nebulizer, hydroxocobalamin and substances that can be taken by mouth.

A. Using Nebulized Glutathione

The more severe the inflammation, the more diluted the glutathione needs to be at the beginning. About half of patients with significant hypersensitivity/ reactive airway disease (and/or migraines) can begin with glutathione at 60 mg per milliliter. A milliliter is the same as a cubic centimeter. More severely affected patients will need to dilute the glutathione with normal saline. First, try the nebulizer with only normal saline. This will tell you if the tubing and nebulizer are okay. If you experience difficulty, you may need tubing with less chemical off gassing. This can be obtained from various sources, including but not limited to Living Source (254-776-4878), Key Pharmacy (800-878-1322) and other sources. If you are extremely sensitive, you can begin the glutathione as low as one drop in a milliliter of normal saline. If you have no irritation, work the concentration up as tolerated. If you reach a concentration that increases the irritation, that concentration is too much for your stage of healing. Dilute it further and work up more gradually. Remember that some is better than none.

After you are easily able to utilize 60 mg per milliliter and have been on this concentration for months, you can gradually further increase the concentration.

As you do this, if you are using the rest of the protocol, you will note that your chemical reactions are declining, and your aching should decrease, energy increase, and other symptoms get better.

You can also use the same concentration of glutathione you are using for nebulizer in a nasal spray bottle that you can use at the time of exposure and/or with reactions. This helps the glutathione enter the brain more rapidly, where it is more quickly available to reduce the biochemical disturbance called neural sensitization.

B. Substances by Mouth

1. Ascorbic acid is best used in a buffered form. To test whether your body level is adequate, you can use Perque C strips (800-806-8671). Simply dip the blue strip in your urine, collected in a cup or other container. If the strip turns white, you have adequate body protection with vitamin C.

2. Vitamin E should be taken in the form of natural mixed tocopherols. It is the gamma tocopherol that is most effective against peroxynitrite. Persons with high sensitivity/inflammation often need 200 I.U. daily of gamma tocopherol.

3. Selenium is helpful to maintain glutathione in its active form. Your body level of selenium will depend in part on your diet and where you live. If your soil where your food is grown is selenium deficient, you are more likely to be selenium deficient: 200 micrograms daily is often needed.

4. Coenzyme Q10 is an antioxidant for your energy metabolism. Many chemically injured patients have difficulty digesting fat. Since Coenzyme Q10 is a fat-soluble substance, a form that is broken down into very small particles, known as "micellized" can provide better absorption.

5. Alpha lipoic acid is a very vital substance: it reactivates glutathione in all body tissues. However, if you have intestinal inflammation, it can be irritating at first. Always take it on a full stomach. If you have irritation, reduce the dose to below the irritation level. Remember: some is better than none. As your inflammation improves you will gradually be able to work up to full dose of 600 mg daily, divided into two or more doses with meals.

6. The enzyme mentioned in the introduction, superoxide dismutase or SOD requires zinc, copper and manganese. These are often absorbed and transported better to cells in patients with significant chemical injury when taken as the picolinate form, for example zinc picolinate. Persons who are very deficient in one or more of these minerals may need higher levels. Be careful about overdosing without testing. Intracellular levels of these minerals can be measured by Metametrix Laboratory (800-221-4620). Zinc can also be measured by SpectraCell Laboratory (800-227-5227).

7. Magnesium is very important to reduce neural sensitization. Magnesium is often deficient in patients with chemical injury. Symptoms of magnesium deficiency include muscle twitching and muscle cramping. Magnesium deficiency can be tested as intracellular levels through Metametrix Laboratory, Great Smokies Laboratory (800-522-4762) or SpectraCell Laboratory for functional adequacy.

8. Trimethylglycine, also known as betaine, is able to donate methyl groups, important in the neural protocol.

9. Folic acid is also an important substance in the neural protocol. This can be taken in the form of folic acid. Some people cannot convert folic acid to its bioactive form. Others do not convert folic acid efficiently. The bioactive form is 5-methyl tetrahydrofolate.

10. There are a number of bioflavonoids that are important in reducing the damage of peroxynitrite. These include ginkgo biloba, silymarin, bilberry, cranberry, and carotenoids like lycopene, beta-carotene, lutein, etc.

When possible, it is ideal to take the above substances twice daily. This helps to continually interrupt the vicious cycle of neural sensitization.

C. Hydroxocobalamin

Hydroxocobalamin is the form of cobalamin (vitamin B12) which is effective as a scavenger for nitric

oxide, the substance that acts to start tile vicious cycle of neural sensitization. This can be used as needed for reactions as well as building body levels up to adequate. As long as reactions are occurring, body levels in the brain are not adequate. If you have reactions, you may wish to try nasal hydroxocobalamin at the time of exposure or with the beginning of increased symptoms from a reaction/exposure. Many individuals can use 500 micrograms per spray, with one spray in each nostril at the beginning of exposure/reaction and then repeating about every 15 minutes until symptoms clear. You may wish to blow your nose first to allow better absorption. Using the nasal spray allows the substance to go directly to the brain where the vicious biochemical cycle is occurring. For some persons, this concentration is too high. If you have any increased symptoms at this level, dilute the nasal spray. The nasal hydroxocobalamin may also be used several times daily or more if this helps reduce symptoms.

To determine if you are deficient, testing through SpectraCell Laboratory* is helpful. Hydroxocobalamin can be taken under the tongue (sublingual). With this approach, if used in liquid form, a concentrated drop is best to avoid swallowing it with saliva. Hydroxocobalamin is better absorbed under the tongue than when taken by mouth through the stomach. Other persons may prefer the injection approach. If doing self-injection, it is important that you receive proper instruction technique. After instruction, you should be observed by a qualified nurse or medical provider who watches you perform all the steps correctly at least twice in a row (two sequential injections). When your health care provider feels confident that you are able to do proper self-injections, he or she can provide you with the proper prescription. All gauge needles have minimal discomfort: 25 to 27 gauge. Somewhat larger needles may be helpful for withdrawing the hydroxocobalamin from the container. 22 gauge is often used for this. Do sterilize the container of hydroxocobalamin and your skin; many patients tolerate Zephirin wipes better than isopropanol. A container for needles and syringes for proper disposal is important and should be used by persons using injection technique. Hydroxocobalamin is a remarkably nontoxic substance. Levels of a thousand times higher than used in the neural protocol are used to treat cyanide poisoning. As long as you have chemical reactions with symptoms of the respiratory tract, it is likely that you need more hydroxocobalamin than the level currently in your body.

*SpectraCell has a unique technology. It tests lymphocytes, a cell with more chemical exposure in lymph fluid. It measures (for each nutrient separately) the ability of your lymphocytes to divide to form new cells, the most demanding cell function.

Summary

NEVER USE THE NEURAL PROTOCOL AS A SUBSTITUTE FOR ENVIRONMENTAL CONTROLS. Environmental controls to reduce irritants and toxins are the single most important measure in healing neural sensitization and other chemical injury. More information. can be obtained about less toxic pest control from Beyond Pesticides (202-543-5450) or The Northwest Coalition Against Pesticides (541-344-5044). A good reference for less toxic consumer products is the book Less Toxic Alternatives by Carolyn Gorman (214-361-9515), an experienced health educator. Dr. Ziem has also written a document called The Environmental Control Plan, which can be used together with the above information sources.

Food is another source of pesticide residue and other toxic chemical food additives. Food grown more naturally, without petrochemical or other toxic pesticides (sometimes called "organic") is another way to reduce your body levels of toxic substances.

Chemical exposure increases the risk of developing many medical conditions. In addition to reactive airway disease and toxic encephalopathy, these include migraines, many autoimmune diseases, neurodegenerative diseases, cancer of the brain and lymph. system, and leukemia. Conditions which are caused or exacerbated by chemicals include sinus problems, ear inflammation especially in children, allergies, bronchitis and many chronic illnesses. Cardiovascular disease diabetes, adult arthritis, "irritable bowel", and "irritable bladder" are now known to be diseases of chronic inflammation. Chronic fatigue is greatly exacerbated by chronic inflammation.

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Multiple Chemical Sensitivity: A 1999 Consensus

ABSTRACT. Consensus criteria for the definition of multiple chemical sensitivity (MCS) were first identified in a 1989 multidisciplinary survey of 89 clinicians and researchers with extensive experience in, but widely differing views of, MCS. A decade later, their top 5 consensus criteria (i.e., defining MCS as [1] a chronic condition [2] with symptoms that recur reproducibly [3] in response to low levels of exposure [4] to multiple unrelated chemicals and [5] improve or resolve when incitants are removed) are still unrefuted in published literature. Along with a 6th criterion that we now propose adding (i.e., requiring that symptoms occur in multiple organ systems), these criteria are all commonly encompassed by research definitions of MCS. Nonetheless, their standardized use in clinical settings is still lacking, long overdue, and greatly needed—especially in light of government studies in the United States, United Kingdom, and Canada that revealed 2–4 times as many cases of chemical sensitivity among Gulf War veterans than undeployed controls. In addition, state health department surveys of civilians in New Mexico and California showed that 2–6%, respectively, already had been diagnosed with MCS and that 16% of the civilians reported an "unusual sensitivity" to common everyday chemicals. Given this high prevalence, as well as the 1994 consensus of the American Lung Association, American Medical Association, U.S. Environmental Protection Agency, and the U.S. Consumer Product Safety Commission that "complaints [of MCS] should not be dismissed as psychogenic, and a thorough workup is essential," we recommend that MCS be formally diagnosed—in addition to any other disorders that may be present—in all cases in which the 6 aforementioned consensus criteria are met and no single other organic disorder (e.g., mastocytosis) can account for all the signs and symptoms associated with chemical exposure. The millions of civilians and tens of thousands of Gulf War veterans who suffer from chemical sensitivity should not be kept waiting any longer for a standardized diagnosis while medical research continues to investigate the etiology of their signs and symptoms.

AS RESEARCHERS AND CLINICIANS with experience in the study, evaluation, diagnosis, and/or care of adults and children with chemical sensitivity disorders, we support the stated goal of the National Institutes of Health 1999 Atlanta Conference on the Health Impact of Chemical Exposures During the Gulf War "to fully characterize the nature of multiple chemical exposures within the Gulf War veteran population and to relate this characterization to what is known about Multiple Chemical Sensitivity (MCS) and related conditions and disorders within civilian populations."(1) Based on research conducted by state and federal government agencies, we already know that MCS is one of the most commonly diagnosed chronic disorders in civilians and the most common—but still largely undiagnosed—disorder of any kind in Gulf War veterans of the United States.

In statewide telephone surveys of randomly selected adults, conducted by health departments in California in 1995 and 1996 and New Mexico in 1997, investigators found that 6% of adults in California(2) and 2% of adults in New Mexico(3) indicated that they had already been diagnosed with MCS or Environmental Illness, whereas 16% in both states said they were "unusually sensitive to everyday chemicals." When randomly selected adults in other states were asked if they were "especially sensitive" (instead of "unusually" sensitive), one-third consistently maintained that they were.(4–6)

Among Gulf War era veterans, data from the largest random survey presented by the U.S. Department of Veterans' Affairs (VA) in 1998 (based on questionnaires completed by 11 216 deployed to the Gulf and 9 761 nondeployed) show that 5% reported chemical sensitivity among the nondeployed personnel and 15% reported the same among the deployed.(7) Other VA researchers report much higher rates—but the same 3-fold difference—in a smaller random sample of VA hospital outpatients: 86% of ill veterans deployed to the Gulf complained of chemical sensitivity, compared with 30% of undeployed ill veterans.(8) In the only study in which MCS was specifically assessed among veterans selected randomly from the VA Registry, investigators found 36% of 1 004 met common research criteria for MCS.(9) Among randomly selected Department of Defense (DOD) personnel who remain on active duty, two larger studies by the Centers for Disease Control found slightly lower—but still significant—2.1- and 2.5-fold increases in the prevalence of self-reported chemical sensitivity among those deployed to the Gulf, compared with those who were not deployed. In the "Iowa" study, in which the prevalence rates for deployed and nondeployed individuals were 5.4% and 2.6%, respectively, investigators used a detailed questionnaire to assess "probable MCS."(10) In the "Pennsylvania" study,(11) in which prevalence rates were 5% versus 2%, respectively, only one "yes/no" question was asked about chemical sensitivity. Canadian Gulf War veterans reported only approximately one-half the prevalence of MCS (2.4%), but nevertheless this was 4 times more than their controls.(12) Even in the United Kingdom where MCS is little known, Gulf War veterans report being diagnosed with MCS at 2.5 times the rate of military controls.(13)

Clearly, there is a significant need for a standardized clinical definition of MCS and a comprehensive clinical protocol that VA, DOD, and other physicians can use to evaluate it. We recommend to our colleagues and the sponsors of the Atlanta Conference—the Department of Health and Human Services' Office of Public Health and Science, the Centers for Disease Control and Prevention, the National Institutes of Health, and the Agency for Toxic Substances and Disease Registry—that MCS be formally defined for clinical

purposes by the top 5 “consensus criteria” identified in a 1989 survey of 89 clinicians and researchers who had extensive experience in MCS but who also held widely divergent views about its etiology.(14) Included were 36 specialists in allergy, 23 in occupational medicine, 20 in “clinical ecology,” and 10 in internal medicine and otolaryngology. We would add only that symptoms associated with chemical exposures must involve multiple organ systems, thus distinguishing MCS from specific single-organ system disorders (e.g., asthma, migraine) that also may meet the first 5 criteria.

Consensus Criteria for MCS

The following consensus criteria for the diagnosis of MCS were gleaned from the study by Nethercott et al.(14) (funded in part by grants from US NIOSH and US NIEHS):

1. “The symptoms are reproducible with [repeated chemical] exposure.”
2. “The condition is chronic.”
3. “Low levels of exposure [lower than previously or commonly tolerated] result in manifestations of the syndrome.”
4. “The symptoms improve or resolve when the incitants are removed.”
5. “Responses occur to multiple chemically unrelated substances.”
6. [Added in 1999]: Symptoms involve multiple organ systems.

Given the only other explicit consensus ever published on MCS—the 1994 statement of the American Lung Association, American Medical Association, U.S. Environmental Protection Agency, and U.S. Consumer Product Safety Commission, that “complaints [of MCS] should not be dismissed as psychogenic, and a thorough workup is essential” (ALA 1994)—we recommend that MCS be diagnosed whenever all 6 of the consensus criteria are met, along with any other disorders that also may be present, such as asthma, allergy, migraine, chronic fatigue syndrome (CFS), and fibromyalgia (FM). MCS should be excluded only if a single other multi-organ disorder can account for both the entire spectrum of signs and symptoms and their association with chemical exposures, such as mastocytosis or porphyria, but not CFS or FM, which are not so associated.

To assist physicians who are unfamiliar with the evaluation of MCS, we recommend that clinical protocols include validated questionnaires for screening and characterizing chemical sensitivity,(15,16) a list of overlapping disorders to consider in the differential diagnosis of MCS, and a list of signs and test abnormalities associated with MCS in the peer-reviewed literature (summarized by Ashford and Miller(17) and Donnay(18)). Although no single test is yet considered diagnostic of MCS, those suggested by signs, symptoms, or history may be helpful in treating and tracking the disorder.

The presentation of MCS may vary greatly among cases and over time. Some individuals are totally disabled by severe symptoms suffered on a daily basis, for example, whereas others are disabled only minimally by mild symptoms suffered occasionally. We, therefore, recommend that any clinical diagnosis of MCS be characterized and followed over time using quantitative and/or qualitative indices of *life impact* or *disability* (e.g., minimal, partial, total); *symptom severity* (e.g., mild, moderate, severe); *symptom frequency* (e.g., daily, weekly, monthly); and *sensory involvement* (identification of which sensory pathways—olfactory, trigeminal, gustatory, auditory, visual and/or touch, including perception of vibration, pain and heat or cold—show altered (+/–) sensitivity and/or tolerance for normal levels of stimuli, either chronically or in response to particular chemical exposures).

For research purposes that require greater homogeneity, we encourage investigators to refine the consensus criteria for MCS with whatever additional inclusion or exclusion criteria they believe are needed to test their hypotheses. The indices and domains that are used to characterize and select both cases and controls in MCS research should be fully reported so that results from different studies can be compared and their broader applicability assessed.

Given the significant overlap in clinic populations of MCS with both CFS and FM, as well as the need to better understand the relationships between these disorders,(19–21) we recommend that all “solicitations” and “requests for applications” issued by federal agencies for human research into any one of CFS, FM, or MCS direct investigators to screen for all three (regardless of their selection criteria, which need not be affected) and to report their results in these terms. There is a precedent for this: the National Institute of Arthritis and Musculoskeletal Disorders routinely requires that in studies of fibromyalgia investigators must screen for and report any overlap with temporo-mandibular joint disorder. CFS, FM, and MCS research could all benefit from greater collaboration, and so we welcome the Congressional initiative of Senator Tom Harkin to earmark $3 million of the DOD’s 1999 Gulf War illnesses research budget for multidisciplinary studies of CFS, FM, and MCS together (solicitation 074&&&-9902-0005 issued 2/12/99) to better understand both their overlaps and differences. We recommend that such three-way studies be solicited by all federal agencies funding CFS, FM or MCS research.

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Standard Neural Protocol as prescribed by Dr. Grace Ziem

The standard neural protocol typically consists of three components.

1. **Glutathione**: used as inhalation via a nebulizer and as a nasal spray. The inhalation is done twice a day and often requires a slow titration in dosage. This is accomplished by diluting the glutathione solution with saline as directed. The nasal spray is used 3 to 4 times a day and also as needed with or prior to exposures that cause symptoms.

2. Key Pharmacy's **NSP Basic Formula** capsules (see attached for ingredients): these contain pure pharmaceutical grade ingredients with no fillers. Start with one capsule daily and then increase as directed to the full dose of six capsules per day. Add Thorne's Ultimate-E capsule once or twice a day to complete the supplement.

3. **Hydroxocobalamin**: given as a sublingual drop and as a nasal spray. Use one drop (5000mcg) under the tongue once a day and use the nasal spray (500mcg/spray) 2 to 4 times a day and also with exposures that cause symptoms.

DATE_____

DR._____ PATIENT NAME_____

ADDRESS_____ ADDRESS_____

PHONE_____ CITY/ST/ZIP_____

DEA#_____ PHONE _____

CREDIT CARD/EXP_____

Rx Neural Sensitization Formulations Page 1

Reduced L-Glutathione Inhalation (Pres. Free) ❑60 mg/ml ❑100 mg/ml ❑150mg/ml ❑200mg/ml

SIG: 2 ml via nebulizer twice daily

Dispense: 60ml 120 ml Refill _____ times PRN NR

Reduced L-Glutathione Nasal Spray (Pres. Free) ❑60 mg/ml ❑100 mg/ml ❑150mg/ml ❑200mg/ml

SIG: 1-2 sprays in each nostril three to four times daily and 15-30 minutes before anticipated exposure or with exposure.

Dispense: 30 ml 40 ml 60 ml Refill _____ times PRN NR

Hydroxocobalamin Sublingual Drops (Pres. Free) ❑ 1mg/gtt ❑ 2mg/gtt ❑ 3mg/gtt ❑ 5mg/gtt

SIG: Use one drop under the tongue once a day.

Dispense: 2ml 3ml 5ml Refill _____ times PRN NR

Hydroxocobalamin/Folic Acid Sublingual Drops (Pres. Free) ❑ 2/2mg/gtt ❑ 3/3mg/gtt ❑ 5/5mg/gtt

SIG: Use one drop under the tongue once a day.

Dispense: 2ml 3ml 5ml Refill _____ times PRN NR

Hydoxocobalamin Nasal Spray (Pres. Free) ❑ 1mg/ml ❑ 2mg/ml ❑ 3mg/ml ❑ 5mg/ml

SIG: 1 spray in each nostril at beginning of exposure, repeat every 20-30 min until symptoms subside.

Dispense: 5ml 10ml 30ml Refill _____ times PRN NR

Sodium Chloride 0.9% Solution (Pres. Free)

SIG: Use to dilute Glutathione

Dispense: 60ml 120 ml Refill _____ times PRN NR

❑**Nebulizer** Purchase / Rent (circle one) ❑**Tygon Tubing** for nebulizer ❑with nasal Adapter

_____ _____

SUBSTITUTION PERMITTED DISPENSE AS WRITTEN

DATE_____

DR._____ PATIENT NAME_____

ADDRESS_____ ADDRESS_____

PHONE_____ CITY/ST/ZIP_____

DEA#_____ PHONE _____

CREDIT CARD/EXP_____

Rx Neural Sensitization Formulations Page 2

1. NSP WITHOUT ALPHA LIPOIC ACID Basic Formula Capsules

The basic formulation contains the following vitamin, mineral, and bioflavanoid supplements PER SIX (6) CAPSULES:

General Antioxidants & Cofactors of Antioxidants
Ascorbic Acid 250mg, Selenium 200mcg, Coenzyme Q-10 75mg, Pyridoxal-5-Phosphate 25mg, Riboflavin-5-Phosphate 25mg

Decreases Superoxide
Folic Acid 2mg

Components of Superoxide Dismutase
Zinc 15mg, Copper 1mg, Manganese 1mg

Compounds Related to Peroxynitrite Biochemistry
Magnesium 250mg, Betaine 500mg

Scavengers of Peroxynitrite and its Breakdown Products
Ginkgo Biloba extract 120mg, Silymarin (Milk Thistle Extract) 140mg, Bilberry Extract 120mg, Cranberry Extract 400mg, Carotenoid Mixture (lycopene, beta-carotene, and lutein 5mg each)

Usual Sig (titration schedule):

Take 1 capsule daily with food to start, then increase up to 3 capsules twice daily (1st capsule after 10 bites of food, 2nd capsule after 20 bites of food and 3rd capsule at end of meal)

Dispense: 30 60 100 200 Refill: _____ times PRN NR

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2. Thorne Research Vitamin E 500IU Capsules from mixed tocopherols (d-Alpha, Beta, Gamma, & Delta tocopherol)

SIG: Take one capsule once a day.

Dispense: 60 caps Refill _____ times PRN NR

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3. Thorne Research Thiocid 100mg (alpha-lipoic acid)

SIG: Take one capsule daily with food and gradually work up to 3 capsules (300mg) twice daily with breakfast and dinner. May then switch to NSP Basic Formulation with alpha-lipoic acid (see next page).

Dispense: 60 caps Refill _____ times PRN NR

SUBSTITUTION PERMITTED DISPENSE AS WRITTEN

DATE_____

DR._____ PATIENT NAME_____

ADDRESS_____ ADDRESS_____

PHONE_____ CITY/ST/ZIP_____

DEA#_____ PHONE _____

CREDIT CARD/EXP_____

Rx Neural Sensitization Formulations Page 3

NSP Basic Formula Capsules

The basic formulation contains the following vitamin, mineral, and bioflavanoid supplements PER SIX (6) CAPSULES:

General Antioxidants & Cofactors of Antioxidants
Ascorbic Acid 250mg, Selenium 200mcg, Coenzyme Q-10 75mg, Alpha Lipoic Acid 600mg, Pyridoxal-5-Phosphate 25mg, Riboflavin-5-Phosphate 25mg

Decreases Superoxide
Folic Acid 2mg

Components of Superoxide Dismutase
Zinc 15mg, Copper 1mg, Manganese 1mg

Compounds Related to Peroxynitrite Biochemistry
Magnesium 250mg, Betaine 500mg

Scavengers of Peroxynitrite and its Breakdown Products
Ginkgo Biloba extract 120mg, Silymarin (Milk Thistle Extract) 140mg, Bilberry Extract 120mg, Cranberry Extract 400mg, Carotenoid Mixture (lycopene, beta-carotene, and lutein 5mg each)

Usual Sig (titration schedule):

Take 1 capsule daily with food to start, then increase up to 3 capsules twice daily (1st capsule after 10 bites of food, 2nd capsule after 20 bites of food and 3rd capsule at end of meal)

Dispense: 30 60 100 200 Refill: _____ times PRN NR

_____ _____

SUBSTITUTION PERMITTED DISPENSE AS WRITTEN