

## Steps of the Shoemaker Protocol

Once the diagnosis of Chronic Inflammatory Response Syndrome (CIRS) from water damaged buildings has been established by history, physical, and labs, the Shoemaker protocol is the only peer reviewed published protocol shown to reverse the symptoms and laboratory findings. The steps are as follows:

- 1) Remove exposure from water damaged buildings. For many people, this is the most critical, yet most difficult step. Dr. Shoemaker has shown that the best test for determining the safety of a building is an ERMI test from Mycometrics. The ERMI stands for the Environmental Relative Moldiness Index. It is a quantitative PCR analysis that looks at spore equivalents of 36 species of mold. Shoemaker has determined from his database of thousands of patients that the cutoff for safety is an ERMI score of 2 if the MSH is < 35 and C4a is less than 20,000 and 0 if the C4a is greater than 20,000. He later developed a derivative of the ERMI score looking at 5 species, which he calls HERTSMI-2. This test is also done at Mycometrics and the cutoff for safety is a HERTSMI-2 of 10 for someone previously sickened by a water damaged building . More information can be found at <http://www.survivingmold.com/diagnosis/hertsmi-2>

I recommend that my patients test buildings that they spend a great deal of time at which usually includes their homes and workplaces. If the ERMI or HERTSMI-2 is over the safety cutoffs, I recommend that they remediate or move out of the building. Briefly, remediation involves identifying and correcting all sources of water entry, removing water damaged construction materials, and thorough cleaning of all contents of the building. After remediation, a HERTSMI-2 should be performed. The criteria for a successful remediation is a HERTSMI-2 of 10 or less.

If patients choose to move, I recommend that they run an ERMI or HERTSMI-2 before moving into any new buildings.

The industry standard of sampling the air for spores is not an acceptable substitute for many reasons. One of the main limitations is that over 99% of the particles that carry the inflammagens from water damaged buildings are smaller than 3 microns. Spore traps can only detect particles that are larger than 3 microns and therefore, miss over 99% of the inflammagens. Studies have shown that for every spore, there can be 100-500 inflammagen carrying fragments. The World Health Organization has stated that if one wants to do air sampling, it should be done in multiple locations per room, at

multiple times of the day, multiple days per week. In other words, air sampling done properly is too time consuming and cost prohibitive. Finally, only the ERMI and HERTSMI have been associated with sequential activation of innate immune responses, not air testing. I have seen numerous patients who have been told that their air tests were “normal” yet they had high ERMI or HERTSMI scores and their bloodwork shows persistent inflammation.

- 2) Cholestyramine or Welchol. The next step is to interrupt enterohepatic recirculation of biotoxins using either cholestyramine or Welchol for at least a month. The dose of cholestyramine is 4 grams ½ hour before eating 4 times a day. If cholestyramine can not be tolerated, a less effective alternative is Welchol 2 tablets three times a day with food. A number of people are sensitive to the fillers in cholestyramine so using compounded cholestyramine without fillers is a good alternative. The success of this step can be monitored by seeing improvements in the VCS (Visual Contrast Sensitivity) Test. If there is no improvement, the most common cause is persistent exposure to a water damaged building.
- 3) Treatment of MARCONS. MARCONS stands for Multiple Antibiotic Resistant Coagulase Negative Staphylococcus. It colonizes the deep nasal aerobic spaces of the majority of people with CIRS. This bacteria forms biofilms and releases biotoxins that can cleave MSH (melanocyte stimulating hormone), an anti-inflammatory neuropeptide. It is diagnosed by a deep nasal swab, which is sent to DLM labs in Massachusetts. If it is present and there are at least 2 classes of antibiotic resistance, the treatment is the use of compounded BEG spray (bactroban, edta, and gentamicin) 2 sprays three times a day for 1 month. Earlier versions of the protocol involved using Rifampin, but is no longer necessary.
- 4) Correct anti-gliadin antibodies. If these antibodies are found on blood testing, the patient needs to avoid gluten containing foods for at least 3 months. I do find in my practice that most patients feel better avoiding gluten indefinitely.
- 5) Correct androgens. Many people with CIRS will have low androgens due to excessive activity of the aromatase enzyme. Dr. Shoemaker has shown that this will correct with VIP. In cases of those with low DHEA levels, supplemental DHEA may help correct androgen levels.

- 6) Correct ADH / osmolality. Most people with CIRS will have ADH (antidiuretic hormone) and osmolality levels that are out of proportion to each other. The most common pattern is a relative or absolute deficiency of ADH. Typically, one will see an ADH level either low or low normal with osmolality mid or high normal. ADH causes the kidney to retain free water. Therefore, when levels are relatively low, patients will commonly experience excessive thirst and urination. In more severe cases, people will experience frequent static shocks.

The treatment is to use desmopressin 0.2 mg every other night. Sodium levels must be checked in 5 days then again in 10 days as hyponatremia can sometimes occur. If hyponatremia occurs, patients may experience poor appetite and nausea.

- 7) Correct MMP 9 (Matrix Metalloproteinase 9). MMP is an enzyme that break down extracellular tissue. If MMP 9 is over 332 ng/mL, then this is treated with a low amylose diet and high dose fish oil (2.4 g of EPA, 1.8 g of DHA).
- 8) Correct VEGF (Vascular Endothelial Growth Factor). This substance stimulates the growth of new blood vessels in response to Hypoxia Inducible Factor (HIF). In many people with CIRS, VEGF is suppressed to less than 31 pg/mL. The treatment is high dose fish oil and a low amylose diet as listed in step 7.
- 9) Correct Complement C3a. This can be elevated if there is the presence of bacterial membranes such as those with acute Borreliosis. If high, the Borrelia needs to be treated first with antibiotics. If the levels remain high, a statin can be used to lower the level.
- 10) Correct Complement C4a if levels are greater than 2830 ng/ml. In earlier versions of Dr. Shoemaker's protocol, erythropoietin (Procrit) injections were given. Now that VIP is available, VIP is the current treatment of choice. Note that this lab test needs to be run at National Jewish Hospital in Denver.
- 11) Correct TGF-B (Transforming Growth Factor Beta). If elevated (over 2380 pg/mL), the treatment is losartan up to 25 mg bid. A metabolite of losartan called exp3179 lowers TGF beta.
- 12) VIP (Vasoactive Intestinal Polypeptide). If the patient remains symptomatic after following all of the above steps, then the use of VIP is needed. It is a nasal spray that is

dosed at 50 mcg/mL, 1 spray 4 times a day. The first dose should be given in the office. A TGF B and C4a should be drawn before the first spray and again in 15 minutes. If the levels rise, there is a hidden mold exposure.

According to Dr. Shoemaker's paper published in 2013, administration of VIP will correct C4a, TGF beta, VEGF, MMP-9, estradiol, testosterone, vitamin D3, and PASP. More importantly, it improves the quality of life.

It is critical that there be no continued mold exposure before starting VIP otherwise it will be ineffective. VCS must also be normal and MARCONS must not be present to ensure that VIP will be effective.

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