

## **SUGGESTED THERAPY OF CHRONIC SYSTEMIC CHLAMYDIAL AND CHLAMYDIAL/MYCOPLASMAL CO-INFECTIONS**

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There are a number of considerations when undergoing therapy for infections found in chronic illnesses, including whether to use traditional as well as integrative nutraceutical approaches. These are discussed in the following sections, including antibiotic/antifungal therapies and dietary supplements. The Institute for Molecular Medicine is a nonprofit institution and does not endorse commercial products. The products and procedures below are only examples of the types of approaches and substances that could be beneficial to patients with chronic illnesses. Consult your personal physician for advice on treatments, dosing and schedules that can vary for each patient.

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### **ANTIBIOTIC THERAPY FOR CHRONIC CHLAMYDIAL INFECTIONS**

Patients with *Chlamydia* species infections or combinations of *Chlamydia* and *Mycoplasma* infections appear to do well on long-term combinations of antibiotics plus nutritional and nutraceutical support [1,2]. Examples of antibiotics that have proven useful for treatment of replicating and nonreplicating forms of *Chlamydia* are discussed here [3]. For replicating, active infections investigators have recommend starting with amoxicillin (initially at 500 mg/day and if tolerated, this dose should be increased to 2X 500 mg/day) [3]. Herxheimer reactions (or ‘die-off’ reactions involving chills, fever, night sweats, muscle aches, joint pain, short term memory loss and fatigue or a general worsening of symptoms) usually occur for days to weeks due to release of bacterial cell wall degradation products and stimulation of interleukins or chemical messengers that cause worsening of some signs and symptoms. Oral antibiotics must be taken with a full glass of water, crackers or bread to avoid esophageal irritation (do not lie down for at least 1 hr). For some antibiotics direct sunlight must be avoided. To overcome Herxheimer reactions or other adverse responses i.v. antibiotics have been used for a few weeks—then oral. Oral Benadryl (diphenhydramine, 50 mg) at least 30 min before antibiotics and lemon/olive drink (1 blended whole lemon, 1 cup fruit juice, 1 tbs olive oil—strain and drink liquid) are useful. This period usually passes within a few weeks and differs from allergic reactions that can cause immediate rashes, itching, swelling, dizziness, trouble breathing and other problems—if these occur, seek immediate medical attention. Many antibiotics cannot be used during pregnancy or by infants.

For patients that cannot tolerate the daily dose of amoxicillin because of severe Herxheimer reactions, it can be used every other day for a week, then the daily dose of 500 mg for a week and finally the 2X 500 mg/day dose is used. Once the twice daily dose of amoxicillin is well tolerated, probenecid (Benemid, Merk, 500 mg/day) is added to the amoxicillin using the same type of gradual schedule until the patient reaches 2X 500 mg/day of *both* amoxicillin and probenecid. The patient is closely monitored on these first two agents for side effects or Herxheimer reactions. These agents are continued for the entire course of chlamydial therapy. If the patient is allergic to penicillins, such as amoxicillin, then penicillamine (cuprimine, 125 mg 2X per day, taken on an empty stomach) is substituted for amoxicillin. Penicillamine is a good heavy metal chelator, and patients with high levels of lead, mercury and other heavy metals may benefit additionally by removal of heavy metals from their systems. In either case, the probenecid is used to potentate the uptake and intracellular levels of amoxicillin/penicillamine by decreasing its renal secretion.

Once the amoxicillin/probenecid is well tolerated, additional antimicrobial agents that are directed at cryptic and replicating *Chlamydia* are added. These antimicrobial agents, like the amoxicillin and probenecid, are introduced very gradually, being given initially once per day on only 1-2 days per week, then 3-4 days per week,

then daily. Once the additional agents are well tolerated (This may take 2-4 weeks or longer), they must be used for at least 6 months or longer. Examples of these additional antibiotics are: azithromycin (500 mg once/day), rifampin (300 mg 2X/day), doxycycline or minocycline (100 mg 2X/day), metronidazole (500 mg 2X/day) and ciprofloxacin (500 mg 2X/day) or levofloxacin (500 mg once/day). This regimen must be maintained to suppress both persistent or cryptic and replicating forms of *Chlamydia* species [3].

## **ANTIBIOTIC THERAPY FOR CO-INFECTIONS OF CHLAMYDIA AND MYCOPLASMA**

Patients with coinfections of *Chlamydia plus Mycoplasma* species may not tolerate the initial use of Amoxicillin. The reason for this is that the mycoplasmal infections are not susceptible to amoxicillin, and other antibiotics are recommended, such as doxycycline or minocycline, azithromycin and clarithromycin [1]. These are used singly at first, similar to the amoxicillin regimen above. For *Mycoplasma* and *Chlamydia* species infections, 6 months [no break] therapy, then 6-week on 2-week off antibiotic cycles (doxycycline, ciprofloxacin, azithromycin, minocycline, clarithromycin or similar, p.o., work best as capsules without starch fillers). Some patients benefit from combinations of antibiotics, such as doxycycline plus azithromycin or ciprofloxacin, especially if there are limited responses to either antibiotic alone. These are worked into the regimen slowly, as explained above for amoxicillin. Once the non-penicillin antibiotics are well tolerated, amoxicillin is slowly worked into the regimen by adding it at 500 mg 2-3X per week until 500 mg 2X/day is achieved. This should be continued for at least 6 months before the 6-week on 2-week off program is started. The reason for the off period is to determine when antibiotics are no longer necessary [3]. If necessary, the initial 2-week off cycles can be supplemented with Augmentin (in between the 6-wk cycles) or concurrently, if needed, to help in suppressing secondary bacterial infections. Some add the antiviral Famvir (500 mg 3X/day) or other antivirals (Ganciclovir, 1000 mg 2X/day) for the first 2 weeks in a 6-week antibiotic cycle (see next section). Mycoplasmas may have some characteristics of viruses, so this can be useful, and viral infections, and in particular human Herpes viruses, are also important in these illnesses.

## **GENERAL NUTRITIONAL CONSIDERATIONS WHEN UNDERGOING THERAPY**

Chronic illness patients are often immunosuppressed and susceptible to opportunistic infections, so proper nutrition is imperative [4]. You should not smoke or drink alcohol or caffeinated products. Drink as much fresh fluids as you can, lots of juices (such as Juice Plus, [www.juiceplus.com](http://www.juiceplus.com)) or pure water are best. Try to avoid high sugar and fat foods, such as military (MRE) or other fast foods and acid forming, allergen-prone and system stressing foods or high sugar/fat junk foods. Increase intake of fresh vegetables, fruits and grains, and decrease intake of fats and *simple or refined sugars that can suppress your immune system*. To build your immune system cruciferous vegetables, soluble fiber foods, such as prunes and bran, wheat germ, yogurt, fish and whole grains are useful. In some patients exclusive use of 'organic' foods has been beneficial. For heavy metal removal, Garlic Plus (Longevity) has been proposed, and we find the use of Detoxamin suppositories useful ([www.detoxamin.com](http://www.detoxamin.com)). For help with bowel bacteria and bladder infections, many recommend D-mannose (Biotech). This natural sugar inhibits binding of bacteria to biological membranes.

Chronic illness patients are often depleted in vitamins (*especially* B complex, C, E, CoQ-10) and certain minerals. These illnesses often result in poor absorption. Therefore, high doses of some vitamins are useful; others, such as vitamin B complex, cannot be easily absorbed by the gut (oral dose). Sublingual (under the tongue) *natural* B-complex vitamins in capsules or liquids (also injectable) (Total B, Real Life Research or GNC or [www.vitaninshoppe.com](http://www.vitaninshoppe.com)) should be used instead of swallowed capsules. B complex vitamins are especially important in *Borrelia* and *Mycoplasma* infected patients. General vitamins plus extra C, E, CoQ-10, beta-carotene, folic acid, bioflavoids and biotin are best. L-cysteine, L-tyrosine, L-glutamine, L-carnitine, malic acid and especially flaxseed or fish oils are reported to be useful. Certain minerals are depleted in chronic illness patients, such as zinc, magnesium, chromium and selenium. Some recommend up to 300 mcg/day sodium selenite, followed by lower doses. Extra vitamins and minerals are very important if patients are removing heavy metals with chelating agents. Vitamins and minerals should not be taken at the same time of

day (3 hr difference) as antibiotics or antivirals (or oxygen therapy), because they can affect absorption. Some recommend that antioxidant vitamins be taken at least 2 hr before or after antibiotic therapy. The suggested doses of vitamins can vary dramatically among patients; consult with your physician or nutritionist for appropriate dosage. Some sources are: Prohealth, [www.immunesupport.com](http://www.immunesupport.com), American Biologics, [www.americanbiologics.com](http://www.americanbiologics.com), or VitaminShoppe, [www.vitaminshoppe.com](http://www.vitaminshoppe.com).

## **OXIDATIVE THERAPY FOR CHRONIC INFECTIONS**

Chlamydia and Mycoplasma species infections are considered borderline anaerobic infections that grow and survive better in low oxygen environments. Oxidative therapy can be useful in suppressing a variety of anaerobic infections. We recommend several weeks to months of Hyperbaric Oxygen (1.5-2.0 ATM, 60 min) treatments, because these are well tolerated by most patients with chronic infections. Alternatively, American Biologics Dioxychlor, i.v. ozone or hydrogen peroxide are useful. Some patients have used peroxide baths with 2 cups of Epsom salt in a hot bath or Jacuzzi. After 5 min, add 2-4 bottles 16 oz. of 3% hydrogen peroxide. Repeat 2-3X week; but no vitamins must be taken 8 hr before the bath. The hydrogen peroxide is added after your pores open. This appears to have some benefit to patients, especially those with skin/muscle problems. Hydrogen peroxide can also be directly applied to skin after a work-out or hot shower/tub. Leave hydrogen peroxide on for 5 min, and then wash off. For oral irrigation, mix 1 part 3% hydrogen peroxide with 2 parts water and use like a mouth wash 3X per day. Most chronic illness patients have periodontal problems, and oral infections and bone cavitation infections are common. These should not be ignored, because they can become systemic and spread to other sites.

## **REPLACEMENT OF GUT FLORA**

Patients undergoing treatment with antibiotics and other substances risk destruction of normal gut flora. Antibiotic use that depletes normal gut bacteria and can result in over-growth of less desirable bacteria. To supplement bacteria in the gastrointestinal system yogurt and especially live cultures of *Lactobacillus acidophilus* in capsules or powder are strongly recommended. Mixtures of *Lactobacillus acidophilus*, *L. bifidus*, *B. bifidum*, *L. bulgaricus* and FOS (fructooligosaccharides) to promote growth of these probiotics in the gut (example, DDS-1, NutraCeuticals, DDS-Plusor Multi-Flora ABF, UAS Labs, [www.uaslabs.com](http://www.uaslabs.com) Intestinal Care-DF. *L. acidophilus* mixtures (above 2.5-3 billion live organisms) should be taken 3X per day. For irritable bowel, the nutraceutical Calm Colon (Samra) has proven to be very effective in clinical trials. A very good probiotic mixture is Theralac ([www.theralac.com](http://www.theralac.com)). In addition, to improve digestion and especially absorption enzyme mixtures have proved useful. The best known of these is Wobenzym (The Health Stores, [www.healthstores.com](http://www.healthstores.com) or Zooscape, [www.zooscape.com](http://www.zooscape.com)).

## **NATURAL IMMUNE MODULATORS AND NATURAL REMEDIES**

A number of natural remedies, such as ginseng root, herbal teas, lemon/olive drink, olive leaf extract with antioxidants are sometimes useful, especially during or after antibiotic therapy. More important examples are immune modulators, such as bioactive whey protein (ImuPlus, [www.imuplus.com](http://www.imuplus.com); Immunocal, [www.immunocal.com](http://www.immunocal.com)), ImmunoPro ([www.needs.com](http://www.needs.com) or [www.immunesupport.com](http://www.immunesupport.com)), Transfer Factor (4-Life, [www.transferfactor-4-life.com](http://www.transferfactor-4-life.com), Chisolm Biologicals, [www.chisolmbio.com](http://www.chisolmbio.com)), Immuni-T (Longevity, [www.longevityplus.net](http://www.longevityplus.net)), MGN3 (Lane Labs, [www.lanelabs.com](http://www.lanelabs.com)). Some additional remedies are: olive leaf extract (many sources), NSC-100 (Nutritional Supply, Tahitian Noni (Morinda, 800-445-8596, [www.tahitiannoni.com](http://www.tahitiannoni.com)), Laktoferrin (Nutricology, 888-563-1506 or [www.iherb.com](http://www.iherb.com)), Echinacea-C (several sources). These products have been used to boost immune systems. Although they appear to help many patients, their clinical effectiveness in chronic illness patients has not been carefully evaluated. They appear to be useful during therapy to boost the immune system or after antibiotic therapy in a maintenance program to prevent relapse and opportunistic secondary infections.

## LIPID REPLACEMENT THERAPY FOR CHRONIC INFECTIONS AND RESTORING MITOCHONDRIAL FUNCTION

Lipid Replacement Therapy can be useful in providing membrane lipids in unoxidized form to repair nerve membranes and mitochondrial membranes that are damaged by heavy metals, chemicals and infections [5]. For Lyme Disease patients we recommend the oral supplement Healthy Aging containing NTFactor (Nutritional Therapeutics, Inc. [www.NTFactor.com](http://www.NTFactor.com)). This product comes as tablets that are taken twice per day. For children it should be ground up between two spoons into a course powder that can be added to several spoonfuls of applesauce. The NTFactor is not bitter, but it is slightly sour, and some children actually like the taste. The dose should be 4-6 tablets twice per day. For children 1/2-1 tablet for children up to 2 years-old, 2 tablets for 2-3 years old and 3-4 tablets for 4-5 years-old and 4-5 tablets 5 years-old and older. Research has demonstrated no adverse responses with NTFactor even many times these doses. Since this formulation is a completely natural membrane lipid mixture, there are no known toxicities and no known toxic dose limits. NTFactor can also be taken in a form with vitamins, minerals and probiotics (Propax, [www.propax.com](http://www.propax.com)).

## YEAST/FUNGAL OVERGROWTH WHILE ON ANTIBIOTICS

Yeast overgrowth can occur, especially in females (vaginal infections) [Please read the report by Dr. Teitelbaum on our website, [www.immed.org](http://www.immed.org)]. Gynecologists recommend Nizoral, Diflucan, Mycelex, or anti-yeast creams. Metronidazole [Flagyl, Prostat] has been used to prevent fungal or parasite overgrowth or other antifungals [Nystatin, Amphotericin B, Fluconazole, Diflucan or Pau d' arco, 7 capsules/2X/day] have been administered for fungal infections that can occur while on antibiotics. Some patients have as their principal problem systemic fungal infections that can be seen using dark field microscopy of blood smears. For superficial fungal infections, such as fungal nail, a topical mixture of Lamisil in 17% DMSO 2X/day is effective. As mentioned above, *L. acidophilus* mixtures are used to restore gut flora. Bacterial overgrowth can also occur, for example, in between cycles of antibiotics or after antibiotics have been stopped. Nutraceutical approaches to controlling yeast infections include: Pau d' arco, grapefruit extract, olive leaf, caprylic acid, garlic extract and oregano oil. Diet is especially important in controlling yeast overgrowth, and the dietary instructions above should be followed, such as the elimination of most simple sugars from the diet [15].

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