

Treatment Considerations for Autistic Spectrum Disorder Patients at the Institute for Molecular Medicine

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There are a number of considerations when children are undergoing therapy for Autistic Spectrum Disorder (autism, Asperger Syndrome, etc. and also other similar conditions: ADD, ADHD) including whether to use traditional as well as integrative nutraceutical approaches. The Institute realizes that many families cannot afford traditional treatment programs for ASD, and thus emphasis has been placed on non-invasive approaches, including diet, nutritional supplements and other approaches. These are discussed in the following sections, including antibiotic/antiviral/antifungal therapies for chronic bacterial, viral and fungal infections and dietary supplements. The Institute for Molecular Medicine is a nonprofit institution and does not endorse commercial products or treatment approaches. The products and procedures below are only examples of the types of approaches and substances that could be beneficial to patients with autism, ADD and other chronic childhood illnesses. Consult your physician for advice on treatments, dosing and schedules that can vary for each patient.

**The author has no financial interest in any product discussed below.*

Testing and Therapy for Heavy Metal Contamination

The Institute for Molecular Medicine has found that many chronic illness patients have heavy metal contamination that must be considered in any treatment scheme. Most clinical studies have concentrated on Mercury, Lead, Aluminum, Cadmium and other heavy metals. Although heavy metal removal is a long-term process, sometimes often taking over one year, it does not require expensive, invasive, weekly (or more often) treatments at clinics. Patients should have a heavy metal analysis of hair, stool and urine at a reputable diagnostic laboratory (Doctors' Data, www.doctorsdata.com, 800-323-2784 Great Smokies Diagnostic Laboratories, www.gsdl.com, 800-522-4762). Results should be evaluated by a physician. Parents should be aware that such analyses are only of excreted heavy metals; deposits deep in tissues cannot be tested using these procedures. Non-invasive treatments to remove heavy metals include oral dosing, trans-dermal patches and anal suppositories containing chelating agents. The former can be found at www.edtachelation.com and the latter is available from World Health Products (Detoxamin, www.detoxamin.com, 877-656-4553) and can be used long-term with very few or no side effects. For heavy metal removal, and it is claimed that Garlic Plus (Longevity, 800-580-7587, www.longevityplus.net) has proved useful, but there are no long-term studies to substantiate the above claims.

Diagnosis and Antibiotic Therapy for Chronic Infections

The Institute for Molecular Medicine has found that over 70% of autism patients have chronic infections, such as *Mycoplasma* species, *Chlamydia pneumoniae*, among others. Also, approximately 30% have HHV-6 and some have other viruses, such as CMV. In the Eastern U.S. many children have *Borrelia* infections and co-infections (Lyme Disease). Many autism patients also have fungal infections. *Mycoplasma*, *Chlamydia*, *Borrelia* and other bacterial, viral (HHV-6,

CMV etc.) and fungal infections must be identified and treated properly. This requires analysis of a blood sample obtained by a physician. We recommend Unevx Laboratories, 1664 N. Virginia St., Reno, NV 89557, Tel: 775-682-8280, Fax: 775-682-8290 For treatment of intracellular bacterial infections, as much as 3 months (without a break), then 6-wk on 2-wk off oral antibiotic cycles may be necessary (azithromycin, biaxin, low dose doxycycline, as capsules without starch fillers: details follow in sections below). If the patient does not tolerate drug capsules, an alternative is to mix the contents into applesauce or other children's food. Although such treatments have helped children with chronic infections, care should be exercised in the long-term use of any drug in children. Oral antibiotics must be taken with a glass of water, crackers or bread to avoid esophageal irritation (do not let patients lie down for at least 1 hr). Direct sunlight must be avoided during treatment. To overcome Herxheimer reactions (die-off involving chills, fever, night sweats, muscle aches, joint pain, short term memory loss and fatigue or a general worsening of symptoms), oral Benadryl (diphenhydramine, 25 mg) can be given 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) is useful for some patients. This period usually passes within a few weeks and differs from allergic reactions that can cause rashes, itching, swelling, dizziness, trouble breathing—if these occur, seek immediate medical attention. For patients who cannot take antibiotics, Rain Tree has 3 products (Myco+, C-F for kids, Immune Support), 800-780-5902, www.rain-tree.com. Some of these come also as liquid extracts.

Diagnosis and Antiviral Therapy for Chronic Infections

Large subsets of autism patients show evidence of chronic viral infections, such as HHV-6 or CMV. For HHV-6 and CMV infections, a blood sample is required for testing (see section above). Ganciclovir is an antiviral that can be used. It is usually given intravenously (5 mg/Kg body weight i.v. over 1 hr every day) or oral in 3-wk cycles. Some patients have benefited from the use of Famvir. This can be used as an oral dose for 2 wks. Consult your physician for proper dosing. Nutraceutical treatments can be used instead or concurrently, such as Genistein (in soy/red clover, www.iherb.com) to inhibit viral kinase, rosemary/lemon balm to reduce complement activation, selenite (see minerals) to inhibit viral replication, barley grass and lauric acid (www.coconutoil.com) to inhibit lipid metabolism of viruses and *Phyllanthus amarus/niruri* (www.tropilab.com) to inhibit viral reverse transcriptase. The IMM does not recommend use of antivirals without a thorough discussion of its benefits and possible adverse reactions with your child's physician. Immune enhancement and nutraceuticals should be considered before using antivirals (see section below).

General Nutritional Considerations

Autism and chronic illness patients, in general, are immunosuppressed and susceptible to opportunistic infections, so proper nutrition is important. Fresh fluids should be consumed, such as fruit juices or pure water. High sugar and high fat foods, such as fast foods and acid forming, allergen-prone and system stressing foods or high sugar/fat junk foods should be avoided. Many ASD patients benefit from gluten-free and/or casein-free diets. Increase intake of fresh vegetables, fruits and non-wheat grains, and decrease intake of fats and *simple or refined sugars that can suppress your child's immune system*. Cruciferous vegetables foods, such as prunes, fish and some whole grains, are useful, and various diets can be found on autism support websites. In some patients exclusive use of 'organic' foods has been beneficial, because some children are sensitive to chemicals present in food. Diet is also important to control yeast infections.

Vitamins and Minerals

Chronic illness patients and especially ASD patients are often depleted in certain vitamins (especially B complex, C, E, CoQ-10) and certain minerals. This illness can result in poor absorption. Therefore, vitamin/mineral supplements are necessary, especially if heavy metal chelators are being used. Certain vitamins, such as vitamin B complex, cannot be easily absorbed by the gut (oral dose). Sublingual liquid (under the tongue) *natural* B-complex (Total B, Real Life Research, Norwalk, CA, 562-926-5522 or at www.4discountsupplements.com, or at GNC) should be used instead of swallowed capsules. General vitamins plus extra C, E, CoQ-10, beta-

carotene, folic acid, bioflavoids and biotin are best. Some have suggested extra L-cysteine, L-tyrosine, L-glutamine, L-carnitine, malic acid and flaxseed or fish oils, but the latter lipids should be replaced by NTFactor (see below), and supplementation with excess amino acids should be overseen by a physician. Certain minerals are depleted in essentially all chronic illness patients, such as zinc, magnesium, calcium, chromium and selenium, but most vitamin supplements made for children have appropriate amounts of these minerals. Vitamins and minerals should not be taken at the same time of day as antibiotics, antivirals (2 hr difference) or heavy metal chelating agents (4 hr difference), because they can affect absorption or act against therapy. The suggested doses of vitamins can vary dramatically among patients depending on age and weight; consult with your physician or nutritionist for appropriate dosage. Some patients may require analysis of vitamins, minerals and amino acids so that appropriate doses can be recommended.

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. For autism/ADD patients we recommend the oral supplement Healthy Aging containing NTFactor (Nutritional Therapeutics, Inc. www.NTFactor.com, 800-982-9158). This product comes as tablets that 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 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.

Oxidative Therapy for Chronic Infections and Chemical Exposures

Oxidative therapy can be useful in suppressing a variety of anaerobic infections and removing certain chemicals. For example, several weeks of Hyperbaric Oxygen (1.5-2 ATM, 60 min) treatments, or peroxide baths using 2 cups of Epsom salt in a hot bath or Jacuzzi have been used. After 5 min in an Epsom salt bath, add 2-4 bottles (16 oz.) of 3% hydrogen peroxide. The hydrogen peroxide is added after the pores open in the hot water. Repeat twice per week; no vitamins 8 hr before the bath or hyperbaric oxygen. Hydrogen peroxide can also be directly applied to skin after a hot shower/tub. Leave hydrogen peroxide on for 5 min, and then wash off. For oral irrigation to treat oral infections, 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 these infections can become systemic and spread to other sites.

Replacement of Natural Gut Flora and Suppressing Bowel Disorders

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, DDS-Plusor, Multi-Flora, UAS Labs, 800-422-3371, www.uaslabs.com); Theralac, 800-926-2961, www.theralac.com, *L. acidophilus* mixtures (>3 billion live organisms) should be taken 3X per day or 2 hr after antibiotics. For irritable bowel, the nutraceutical Calm Colon (Samra, 310-202-9999) has proven to be very effective in clinical trials. For heavy metal removal, Garlic Plus (Longevity, 800-580-7587, www.longevityplus.net) has proved useful. For help with bowel bacteria and bladder infections, many recommend D-mannose (Biotech Co., 800-345-1199). This natural sugar inhibits binding of bacteria to biological membranes. In addition, to improve digestion and especially absorption enzyme mixtures have proved useful. The best known of these is Wobenzym (The Health Stores, 800-578-5939, www.healthstores.com or Zooscape, 800-

760-8783, www.zooscape.com).

Natural Immunomodulators and 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, 800-310-8311, www.imuplus.com; Immunocal, 800-337-2411, www.immunocal.com), ImmunoPro (Needs, 800-634-1380, www.needs.com or www.immunesupport.com). Alternatively, Transfer Factor (4-Life, 800-852-7700, www.transferfactor-4-life.com) or Chisolm Biologicals, 800-664-1333, www.chisolmbio.com, Immuni-T (Longevity, 800-580-7587, www.longevityplus.net), MGN3 (Lane Labs, 800-526-3005, www.lanelabs.com), or Mushroom Immune Defense and Best Defense (ProHealth, www.immunesupport.com, 800-366-6056) can be used. Some additional remedies are: olive leaf extract (several sources), NSC-100 (Nutritional Supply, 888-246-7224; www.smartbomb.com, 800-495-3115), Tahitian Noni (800-445-8596, www.tahitiannoni.com), Laktoferrin (Nutricology, www.nutricology.com, 888-563-1506, www.iherb.com), Echinacea-C (NF Formulas, www.bio-life-essentials.com, 800-547-4891). These products have been used to boost immune systems. Although they appear to help many patients, their clinical effectiveness in autism, ADD and other chronic illnesses has not been carefully evaluated. They appear to be useful during therapy to boost the immune system or after antibiotic/antiviral therapy in a maintenance program to prevent relapse and opportunistic secondary infections. For the most part dosing has not been carefully established in children, so you may have to contact the manufacturer for advice.

Yeast/Fungal or Bacterial Overgrowth

Yeast overgrowth can occur, especially during antibiotic therapy. Nizoral, Diflucan, Mycelex, or anti-yeast creams can be used for skin fungal infections. Metronidazole [Flagyl, Prostat] has been used to prevent fungal or parasite overgrowth or other antifungals [Nystatin, Amphotericin B, Fluconazole, Diflucan or Pau d' arco, 1-2 capsules/2X/day] have been administered for fungal infections that can occur while on antibiotics. Your physician will know the proper dose. 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 should be used to restore gut flora. Nutraceutical approaches to controlling yeast infections include: Pau d' arco, grapefruit extract, olive leaf, caprylic acid, garlic extract and oregano oil. The exact dose and schedule are quite different among children, and parents should try initially low doses and increase slowly. Contact the manufacturer for advice.

Avoid Antidepressants, Narcotics, etc.

Antibiotic uptake and immune responses may be inhibited by some drugs, and antidepressants (sertaline [Zoloft], fluoxetine [Prozac], amitriptyline [Elavil], maprotiline [Ludiomil], desipramine [Norpramin], clomipramine [Anafranil], nortriptyline [Pamelor], bupropion [Wellbutrin]), muscle relaxants (cyclobenzaprine [Flexeril]), opiate agonists, anticonvulsives or certain analgesics (oxycodone [Percodan], carbamazepine [Tegretol], acetaminophen/hydrocodone [Vicodin]), narcotics (codeine w/Penergan, propoxyphene [Darvon], morphine), antacids, antidiarrheas among others should not be taken, if possible, or gradually decreased during therapy. Some drugs (certain antibiotics, antidepressants, analgesics, narcotics, etc.) may inhibit immune responses and interfere with therapy. These should be decreased and gradually eliminated.

The above statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure, or prevent any disease.

Antibiotics/Antivirals Recommended by the Institute for Molecular Medicine when Indicated for Treatment of Chronic Bacterial/Viral Infections in Autistic Spectrum Disorder Patients

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Doxycycline (aka Vibramycin, Doxychel, Doxy-D, Doryx) (Children 8 Years and Older)

Doxycycline is a broad-spectrum tetracycline with good lipid solubility and ability to penetrate the blood-brain-barrier. This antibiotic acts by inhibiting microorganism protein synthesis; it is readily absorbed by the (normal) gut, and peak blood concentrations are maintained between 2-18 hrs (half-life, 18-22 hrs) after an oral dose of drug. Food, calcium, magnesium, antacids and some drugs reduce absorption, and alcohol, phenytoin [Dilantin] or barbiturates reduce blood half-life or suppress the immune system.

For bacterial infections in children aged 8 or older, the recommended oral dose (based on weight) is given for a period of 6 months: 100 lbs. or less, 1-2 mg/LB per day divided into two doses; weight over 100 lbs use adult dose of 200 mg/day (100 mg in morning and 100 mg at night). After 6 months, 6 week cycles are suggested (2-weeks in-between). Use in children under 8 years is not recommended due to tooth discoloration, but lower doses of doxycycline have proven to be very effective in children with chronic bacterial infections. Doxycycline can exacerbate chronic signs and symptoms (Herxheimer reactions or adverse responses, such as transient fever, skin, gut discomfort, etc.) but these are usually reduced within a few weeks (*see first section*). Patients usually start feeling better with alleviation of major signs and symptoms within 12 weeks, but in some patients' major symptoms are not alleviated until after 12 weeks. Some patients react to the *starch filler* in the capsules and must use Doryx, a granular form of doxycycline. Virtually all patients relapse (with the same major signs/symptoms) if they stop therapy too soon.

Doxycycline is primarily bacteriostatic and effective against the following organisms: gram-negative bacteria (*N. gonorrhoeae*, *Haemophilus influenzae*, *Shigella* species, *Yersinia pestis*, *Brucella* species, *Vibrio cholera*); gram-positive bacteria (*Streptococcus pneumoniae*, *Streptococcus pyogenes*); mycoplasmas (*Mycoplasma pneumoniae*, *Mycoplasma fermentans* [inc. incognitis strain], *Mycoplasma penetrans*); others (*Bacillus anthracis* [anthrax], *Clostridium* species, *Chlamydia* species, *Actinomyces* species, *Entamoeba* species, *Treponema pallidum* [syphilis], *Plasmodium falciparum* [malaria] and *Borrelia* [Lyme] species).

Precautions: Avoid direct sunlight and drink fluids liberally, especially with oral capsules. Doxycycline therapy may result in overgrowth of fungi or yeast and nonsensitive microorganisms (*see Considerations, first page*). Patients on anticoagulants may require lower anticoagulant doses. Patients with impaired kidney function and patients taking diuretics should not take doxycycline. Other drugs can affect uptake or immune systems (see above).

Adverse Reactions: In a small percentage of patients doxycycline causes gastrointestinal irritation, anorexia, vomiting, nausea, diarrhea, rashes, mouth dryness, hoarseness and in rare cases hypersensitivity reactions, hemolytic anemia, skin hyper-sensitivity and reduced white blood cell counts. In general, doxycycline is considered a very safe drug, in that there are few adverse reactions reported in the literature.

Azithromycin (aka Zithromax) (No Age Limit in Children)

Azithromycin is a azalide (macrolide) antibiotic with good absorption and a serum half-life of ~68 hrs. This class of drug acts by binding to the 50S ribosomal subunit of susceptible organisms where it interferes with protein synthesis. Food decreases absorption rate, but absorption is unaffected by antacids containing magnesium, aluminum or other salts; other drugs may affect absorption (see above).

For children the recommended dose is 10 mg/Kilogram body weight/day (oral capsules taken at once) for each 6-wk cycle of therapy. Azithromycin should not be taken with meals (1 hr before or 1 hr after). Initially, azithromycin may exacerbate some symptoms but these are usually gone within a few weeks. Patients usually start feeling better with alleviation of most major signs/symptoms within several weeks, but in some patients major symptoms are not alleviated within months. Azithromycin has been used for patients aged less than 8 years, in which doxycycline cannot be tolerated, or in patients that no longer respond to doxycycline. Herxheimer reactions usually pass within a few days to weeks. Virtually all patients relapse (show the same major signs/symptoms) after terminating therapy in less than 12 wks. Additional cycles of antibiotic result in milder relapses after drug is discontinued. Azithromycin has been shown to be safe for pediatric use (at 10 mg/KG/day).

Azithromycin is effective against the following organisms: gram-negative bacteria (*Bordetella pertussis*, *Shigella* species, *Haemophilus influenzae*, *Chlamydia* species, *Yersinia pestis*, *Brucella* species, *Vibrio cholera*); gram-positive bacteria (*Streptococci* group C, F, G); mycoplasmas (*Mycoplasma* species); others (*Clostridium* species, *Treponema pallidum* [syphilis], and *Borrelia* species).

Precautions: Azithromycin is principally absorbed by the liver, and caution should be exercised with patients with impaired liver function. Antacids containing magnesium, aluminum or other salts should not be taken at the same time of day with azithromycin.

Adverse Reactions: Adverse antibiotic responses were mild to moderate in clinical trials and included diarrhea (5%), nausea (3%), abdominal pain (3%). In rare cases (<1%) azithromycin may cause cardiovascular problems (palpitations, tachycardia, chest pain) and central nervous system (dizziness, headache, vertigo), allergic (rash, photosensitivity, angioderma), fatigue and other reactions (<1%). In pediatric patients >80% of the adverse responses were gastrointestinal. In children, doses above the suggested 10 mg/kg/day have been shown to produce hearing loss in some patients.

Clarithromycin (aka Biaxin)

Clarithromycin is a broad spectrum macrolide antibiotic with good absorption and serum half-life. This drug acts by binding to the 50S ribosomal subunit of susceptible organisms and interfering with protein synthesis. The drug is mostly bacterostatic but high concentrations can be bactericidal. Food decreases absorption rate, but absorption is unaffected by antacids containing magnesium, aluminum or other salts. Some drugs may interfere with absorption or depress immune systems (see above).

For children the recommended dose is 15 mg/KG body weight/day (oral capsules, taken in morning) for 6 months of therapy, then 6-wk cycles. Clarithromycin should not be taken with meals (1 hr before or 1 hr after). Initially, clarithromycin may exacerbate some symptoms due to Herxheimer reactions and bacterial death but these are usually gone within weeks. Patients usually start feeling better with alleviation of most major signs and symptoms within 1-2 weeks, but in some patients major symptoms are not alleviated until after 12 weeks or so. Clarithromycin has been used for patients that do not respond or cannot tolerate doxycycline. Herxheimer reactions usually pass within days to wks. Virtually all patients relapse (show the same major signs/symptoms) when therapy is stopped within 12 weeks. Additional cycles of antibiotic result in milder relapses after drug is discontinued.

Clarithromycin is effective against the following organisms: gram-negative bacteria (*Neisseria*

gonorrhoeae, N. meningitidis, Moraxella catarrhalis, Campylobacter jejuni, Eikenella corrodens, Haemophilus ducreyi, Bordetella pertussis, Shigella species, Salmonella species, Haemophilus influenzae, Chlamydia species, Yersinia pestis, Brucella species, Vibrio cholera, Aeromonas species, E. coli, gram-positive bacteria (Streptococcus pyogenes, S. pneumoniae, anaerobic Streptococci, Enterococcus faecalis, Staphylococcus aureus, S. epidermidis, Bacillus anthracis, Corynebacterium diphtheriae, C. minutissimum, Listeria monocytogenes, Actinomyces israelii); mycoplasmas (Mycoplasma species, M. pneumoniae, Ureaplasma urealyticum); others (Clostridium species, Treponema pallidum [syphilis], Legionella pneumophila, L. micdadei, Mycobacterium avium, M. chelonae, M. chelonae abscessus, M. fortuitum, Rickettsia species and Borrelia species). Yeasts, fungi and viruses are resistant.

Precautions: Clarithromycin is principally absorbed by the liver, and caution should be exercised with patients with impaired liver function. Antacids containing magnesium, aluminum or other salts should not be taken at the same of day as azithromycin. Macrolides like clarithromycin should not be used with cyclosporin [Sandimmune].

Adverse Reactions: Adverse antibiotic responses were mild to moderate in clinical trials and included diarrhea, nausea, and abdominal pain. In rare cases (<1%) biaxin may cause cardiovascular problems (palpitations, tachycardia, chest pain) and central nervous system (dizziness, headache, vertigo), allergic (rash, photosensitivity, angioderma) and fatigue.

Ganciclovir (aka Cytovene)

Ganciclovir is a synthetic antiviral made from a guanine derivative that is active against cytomegalovirus (CMV) and related herpes simplex viruses, such as HHV-6 viruses. Ganciclovir inhibits replication of herpes viruses by inhibiting viral DNA replication by its incorporation into viral DNA and by inhibition of viral DNA elongation.

The recommended dosage of Ganciclovir [i.v.] is an initial induction dose of 5 mg/Kg i.v. at a constant rate over 1 hr twice on the first day and then once /day for 3 weeks. For oral use Ganciclovir is usually taken three times per day with food for a 3 wk course. The drug reaches a maximum blood dose within 3 hrs after oral administration with food with a half-life of 4.6 hrs. Ganciclovir has been used mainly for treatment of CMV retinitis, CMV in organ transplant cases, and CMV in AIDS cases. Its use in chronic CMV and HHV-6 infections has not been fully investigated.

Precautions: Ganciclovir should not be used in children with renal impairment or in patients with an absolute neutrophil count of <25,000 cells/microliter. Some patients should have serum creatinine or creatinine clearance values monitored to allow for possible dose adjustments in renal impaired patients. Ganciclovir can be used in children at the dose levels mentioned above. In addition, Ganciclovir should not be taken with drugs that have the potential to cause neutropenia and anemia. For example, and Ganciclovir and zidovudine both have the potential to decrease white blood cells and cause anemia. Ganciclovir can change serum clearance rates of some drugs, and Ganciclovir used with drugs that inhibit rapidly growing cell populations may show added toxicity. Therefore, dapsone, pentamidine, flucytosine, vincristine, vinblastine, adriamycin, amphotericin B, among other drugs should not be used with Ganciclovir.

Adverse Reactions: Adverse drug responses were seen in patients that are hypersensitive to Ganciclovir or Acyclovir. The most common side effects were reductions in white blood cells (6-29%), anemia (9-19%), impairment in fertility, chills (7%), sweating (11%), abdominal pain (15%), vomiting (13%), diarrhea (40%), paresthesias (8%) and retinal detachment (8-11%) as well as less frequently chest pain, headache, malaise, constipation, cough, anxiety, confusion, depression, dizziness, dry mouth, insomnia, tremor and edema. The values were obtained for patients with CMV retinitis, organ transplants and AIDS, and they may not reflect the actual incidence rates in chronic illness patients.

Final Comments/Suggestions

Recovery will be gradual not rapid, and almost all patients with bacterial and/or infections will experience initial Herxheimer reactions that can be quite severe and can last for weeks. You will have to be patient and not abandon therapy prematurely, because few patients who have been sick for years recover in less than one-half to one year of therapy. Antibiotics or antivirals should not be taken at the same time of day as vitamins, minerals, supplements, etc. Vitamins and minerals should be taken 2 hrs before or after antibiotics or antivirals to prevent interference with drug uptake. Stop antibiotics or antivirals if adverse reactions occur. You will notice cycles of relapse when patients are severely physically or mentally stressed, and you should not be alarmed if some signs and symptoms occasionally return or worsen. This is not unusual. Eventually your children will be off antibiotics or antivirals, but you will need to continue various supplements to maintain your child's immune system and general nutritional status.

Note: This material has not been evaluated by the FDA. It is general information, should not be construed as medical advice, and is not meant as medical advice or to prevent, diagnose, treat or cure any illness, condition or disease. It is very important that you make no change in your healthcare plan or health support regimen without researching and discussing it in collaboration with your professional healthcare team.