Rex G. Carr, M.D.
FAAPMR
Rehabilitation Medicine
45 Lyme Road, Ste 102
Hanover, NH 03755-1220
(603)-643-5254
Fax (603)-643-5264

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The Treatment of Lyme Disease or Lyme-like illnesses as designed by Rex G. Carr MD as Adapted from Sam Donta MD's Protocol

The ultimate goal for medication is for the patient (adults), during the fall (earliest is mid of Sept.) and winter, to be on Compounded with LoxOral Tetracycline 500 mg Capsule One 60 minutes before Breakfast, Lunch and Supper and Compounded with LoxOral Tetracycline 250mg Capsule One 60 minutes before Breakfast and Supper, plus Compounded with LoxOral Amantadine 100 mg Capsule One after Breakfast, Lunch, and Supper.

And then switching to, during the spring (sometime in April to the end of May) and summer, Aurobindo/Citron Pharmaceuticals (63 on side of pill) Clarithromycin 500mg Tablet or Compounded with LoxOral Clarithromycin 500mg Capsule One after Breakfast, Lunch, and Supper along with Prasco Pharmaceuticals (Plaquenil on side of pill) (actually the Brand Plaquenil) Hydroxychloroquine 200mg Tablet, or Compounded with LoxOral Hydroxychloroquine 200mg Capsule One after Breakfast, Lunch, and Supper.

All that is needed to improve is the use of the above antibiotics, everything that follows is how to deal with the need to have a certain quality of life during the long-term treatment, due to the intense Jarisch-Herxheimer reactions.

For there to be success, one must constantly make sure the pharmacy has given the patient the correct preparation from the correct pharmaceutical company. The Clarithromycin has a "63" on the side of the pill, the Hydroxychloroquine has "Plaquenil", the Nystatin tablet has "MP83" (see the yeast section), the Amantadine is the little peach tablet (see below), and the compounded medications have LoxOral as the filler. Other preparations have benefit, but are not nearly as effective. <u>One must always be vigilant that the patient is taking what is ordered and be vigilant that the company making the pill/capsule has not changed the preparation.</u> When something was working and then it stops working.... assess for a change in the potency of the preparation.

AN IMPORTANT NOTICE TO CLINICIANS:

It is imperative that patients be monitored closely and frequently to know what a certain change in dose of a medication, vitamin, supplement, or antidepressant has done to the patient's symptoms and quality of life. It is imperative to know that most of the concerning problems in treatment are due to milk or milk products leading to loose stools, antidepressants making the person worse, BP improving to the degree that they become orthostatic on otherwise therapeutic doses, and B12 or other supplements making the person worse.... I see it over and over again.... all of my patients usually feel better (after I have given enough antibiotics or improved the yeast

enough) when I reduce or get rid of medications or supplements given in the name of trying to treat the symptoms.

Knowing the chemistry and being aware of interactions and GI issues, broadly: Tetracycline 500mg TID is quite safe. Plaquenil 200mg BID is quite safe. Amantadine 100mg BID is quite safe. Clarithromycin 500mg BID is quite safe.

Since Clarithromycin can prolong the QT interval, TID Clarithromycin dosing is not commonly used in other illness, there are examples of cardiac arrhythmias with BID dosing, several other medications can prolong the QT interval, and being infected with Lyme can cause abnormalities of electrolytes, I have decided to reserve TID spring and summer medication dosing to patients that are doing quite well, and have substantially done well on the best form and full dose of Tetracycline and Amantadine.

I initially monitored a few patients given 2000mg of Tetracycline per day due to the published risk to Liver, Kidney, and Blood cells with Tetracycline, and things have seemed fine.

Clarithromycin given in TID dosing can increase the odds of Elevated LFTs, but I am not convinced it is due to the medication itself, as this can happen as part of the Jarsich-Herxheimer reaction.

My mentor has not found any problems at these or similar doses in his experience. The historical problems published seem to be reversible and, in the case to Tetracycline, may have been due to an old additive and a breakdown product of an old Tetracycline. For Clarithromycin the elevated LFT was only in the initial Biaxin research on TID dosing. And the QT interval problem seems to be if born with a prolonged QT interval, on multiple medications that can prolong the QT interval, or if there are significant electrolyte abnormalities. The bottom line is... other clinicians have not seen these problems in their patients, but I tend to be cautious as I use... what I think are stronger forms of these medications.

Having said that, I have come to the conclusion that many of the observations we have made about the lack of effectiveness/effectiveness or complications/lack of complications have been made using ineffective forms of these and other medications... meaning certain generic forms are much different than others. Certain generics and, on occasion, certain forms of the Brand medications are truly inadequate in their potency. So the absence of a problem using an inadequate generic doesn't mean there won't be a problem with an effective form of a medication for dosing. The effectiveness of the Compounded with LoxOral Tetracycline is much, much greater than any other form of Tetracycline now available. When I compared the brand (and certain other generics) form of Clarithromycin to the generic company that I currently use.. the one that I currently use "won" hands down. I am careful to monitor my patients to see if they have been given a new form or a new generic by the pharmacy.

For Plaquenil, it is now thought to be safe during pregnancy. It is also thought to be not likely to cause the Retinal changes at doses less than 750mg per day (or a very long term cumulative effect), and since we are only giving it for a number of months, the risk should be minimal. I still limit Hydroxychloroquine 200mg BID to no longer than 6 months in adults and 3 months in children. The only medications that I use during pregnancy are Amoxicillin and Nystatin.

Any GI symptoms generally fall into these categories, constipation is improved with the treatment of yeast. Loose stools are due to a Lactose intolerance or the pushing of fluids. GERD/Nausea/burning are generally improved with the reduction of the yeast load, and is often self resolving over time.

And, I find that, generally, none of these medications cause "side effects". Any problem is due to having yeast, killing off Lyme, or some dietary change... such as pushing fluids or

having more milk or milk products. My working theory is that so many of the problems listed for many medications are due to giving medications to patients that had a "Lyme or Lyme-like infection" and it was not recognized. All problems or apparent side effects, or even yeast problems melt away as one reduces the bacterial load, over the months/years of antibiotic dosing. That is a paradigm shift in thinking.

On the other end of the spectrum, I find as there is less "Lyme"... SSRIs and other antidepressants, or even B12 start to be stimulating and make the patient worse! As an example, B12 adds energy in most patients and I usually dose most of it after Breakfast. I often start to hear that they feel worse in the morning and may even have more trouble falling asleep... If they are not in the beginnings of a "Herx" this is due to an AM medication, and in my practice usually B12.

The symptoms of yeast improve as time passes, on the protocol, and the killing of "Lyme". The antibiotics do not promote yeast. It is the "Lyme" that causes the presence of the "Yeast Symptoms". As a scientist, I can only say certain symptoms improve with the treatment of yeast (lower carbohydrate diet and anti-fungal medications) and certain ones improve with the treatment of "Lyme" (antibiotics). And, that the symptoms that had improved, over time, eventually go away and become a non-issue/disappear with prolonged antibiotics.

The course is very much a waxing and waning of symptoms. For example, not only can the symptoms, attributable to "Lyme", increase with each increase or change in antibiotics, but the "yeast" symptoms (including GERD, nausea or burning) can temporarily increase for the first couple of days. The intensity and duration of increased symptoms (the Jarsich-Herxheimer response) is proportional to the increase in antibiotic dose, or the starting dosage, and how badly/well the yeast treatment is working. IE, if the yeast treatment is effective, the shorter the worsening and less intense the worsening. Generally, if a small change is made in the medication(s) and recovery from the worsening takes more than a few days to a week, there is more yeast due to the wrong form of the yeast medication being taken, more carbohydrate has been added to the diet, more physical activity, stress, or a new illness, such as a virus, sinus infection, or pneumonia. The majority of my time, with a patient, is spent asking questions to determine whether or not they had responded with a short worsening of symptoms, and if not, what factor(s) kept the person from improving as they should.

The perfect situation is that their symptoms worsen for a few days, followed by recovery from each increase in antibiotic change in antibiotic(s), and finally the patient is able to notice another level of actual improvement in their symptoms.

This protocol begins, with small doses, building up to the full doses and then repeating that process as the patient's condition allows, and continues until the patient has shown no improvement for two months and there has been no evidence of killing off Lyme for two months, hoping that the patient will then be symptom free. Once the patient has achieved that criteria, the medications are stopped and the patient is monitored for at least three months for return of symptoms. If/when they return, the process is started again... but, it goes much faster the next time around. I, generally, discharge the patient and ask then ask that they inform me of <u>any</u> return of symptoms/problems, for <u>any</u> reason.

All that follows is information that is used to get to that treatment goal. There are complications of having Lyme disease and its treatment that need to be addressed for the individual person to safely, and in a tolerable fashion, having noticeable improvement over the course of treatment.

There is a specific disease/pathology model that I will use in analyzing what is the best treatment course. This model is important in deciding what interventions will cause the patient to “be better”. It is my opinion that there are many interventions that will cause a person to “feel

better" (reduction of symptoms) as opposed to "being better" (the reduction of the bacterial load). I focus my practice on doing the best the patient and I can do to cause the person to "be better".

The majority of symptoms are being caused by a combination of the sympathetic nervous system activating muscle Myofascial trigger points and that activity is being "perpetuated" by the side effects of the chemicals the immune system is using to try and kill the pathogen. The worsening of symptoms we see when an antibiotic is being given is an increase in the immune reactants causing the feeling of being "ill" to become more intense, and the "pains" are mostly from the trigger points as opposed to actual joint inflammation. This means that any intervention that improves on the symptoms is working by reducing the immune system activity, calming down the sympathetic nervous system, by reducing the activity of the trigger points, or masking the symptoms. Anything that makes the symptoms worse is increasing the immune system's activity, is increasing the sympathetic nervous system activity, is increasing the activation of trigger points, or unmasking symptoms.

When I evaluate patients that have, either Myofascial pain or "Lyme Disease", I am actually asking myself, what are the multiple perpetuating factors that result in this person having the Myofascial Pain? The "Lyme" infection is just one of many that they might have.

I also believe that the reduced Vitamin D, B12, Folate, Magnesium, or Iron that we will often find in these patients is, for the most part, being caused by the body in an attempt to enhance the immune response. This is going to seem quite radical to most clinicians.

The general concept that I use with vitamins and minerals, is that one wants to try to avoid a deficiency, but that doing more than that is counter productive, because it inhibits the immune system. It is my belief that giving supplements is actually countering what the body is trying to do to increase the attack on the pathogen, and the lower vitamin levels are <u>not</u> due to the need for more vitamins because the body is using them up. So, the mechanism, whereby, if I give a good multivitamin and the patient feels better, is likely because the immune system is now less activated, and that this has the potential to reduce the rate at which the pathogen is being killed off. It is at minimum causing the person to feel better than the state of the illness would normally allow. I have had several patients that have an additional "Herx", with the stopping or reduction of a vitamin, followed by a distinct further improvement in well being. If the Vitamin, such as B12 or iron is stopped too early, the patient get worse and worse over time. If I increase the Vitamin, they feel improved... and, the next time I try to reduce... the desired effect is achieved. A few patients actually have more pain, worse sleep, and anxiety with higher doses of B12. And a rare patient that just gets worse with vitamins.

These are important concepts to keep in mind in deciding which interventions are causing a person to "feel better" (a reduction in symptoms and not a reduction in bacterial load) as opposed to interventions that cause a person to "be better" (a reduction the bacterial load). I have had many patients that actually feel better with the stopping of vitamins or supplements. It is my view that almost all interventions should be done one at a time, with slow increases and close monitoring each step of the way. I interview the patient extensively to determine what changes in symptoms and at what time of day the changes occur to understand what effect any intervention has had on them, knowing the pharmaco-dynamics of the "medication/supplement".

When a person is given an SSRI, the symptoms will go down, if used in a certain way. This is due to the increase in serotonin in the synapses, which improves the sleep and reduces the physical effect of anxiety, thereby causing a reduction in the sympathetic nervous system activity. The net effect is reduced pain and improved energy. This intervention would not cause a reduction in the bacterial load, but one might think that they are better than they really are. So, the use of antidepressants, gabapentin, vitamins, minerals, non-antibacterial herbs, being

pregnant, sleep medications, or pain medications may cause the person to feel better than they really are. A further increase in a helpful medication/supplement can easily cause a worsening of symptoms. This is especially true for SSRIs and SNRIs.

Another example, where the supportive intervention may mask an important symptom, is that either Gabapentin or the SSRIs can actually attenuate the symptom increase associated with a Jarisch-Herxheimer reaction. So, a person may have a diagnostic “Herx” and not know it. This is very important, because if the person is taking something that reduces the symptoms, one might think that there was no response to an antibiotic and therefore there was no bacterial load left to treat, when that conclusion would be wrong. I believe that is this one reason why so many patients need to be retreated or seem to stop improving. IE, they are artificially feeling better and the symptoms are being reduced, but not in a way proportional to the level of the bacterial load. It is my belief this is the main reason for so many "re-occurrences" many clinicians notice in their patients.

One must assess how the person is actually doing on a minimum amount of supportive medications. As the person gets better and better the supportive symptomatic medications (such as Gabapentin or antidepressants) can be weaned away. If for some reason a medication such as an antidepressant is otherwise necessary, one must keep in mind that it is covering up some symptoms and making the person seem artificially less symptomatic and therefore they have more bacterial load than the level of symptoms would otherwise have suggested. Another interesting observation is that with the SSRIs and Gabapentin side effects are more likely to start occurring as the antibiotics have improved the person’s clinical state. (Especially stimulation from an SSRI, like fluoxetine)

The other important concept is the ability of the bacteria to “hide” from some antibiotics or become dormant, plus their ability to “hide” from the immune system. Remember, the symptoms are from the immune system's reaction, not the bacteria or bacterial toxin. If the immune system doesn’t detect the pathogen, there will not be an immune response and there will be fewer and less intense symptoms. There is evidence of the pathogen being able to take an intracellular or bio-film protected state, essentially hiding from the immune detection system. This combined with the concept in the previous paragraph (s) is why we will often see a patient being treated with antibiotics starting to feel much better, the treatment is then stopped and within a few days to months the symptoms have once again returned or escalated. This is the basis of a technique to further reduce the bacterial load, whereby; the antibiotics will be stopped (due to lack of progress) and then after the symptoms have again increased or returned, the antibiotics are restarted.

The concept of yeast is yet another confounding factor. Yeast can cause all of the symptoms of Lyme plus a few others. It has been my experience that anyone that has yeast has it because they have “Lyme”. The symptoms more specific to yeast are: acne, greasy appearing skin, abdominal bloating, constipation, cravings for sugars, sweets, or carbohydrates, vaginal irritation, nausea, loss of appetite, anal itching, GERD, irritability, and pruritis in any area.

Another confounding factor is "Lactose Intolerance". This is the primary reason for a patient having loose stools. The second most common is the "pushing of fluids". On very rare occasion, I find a patient that needs a course of Metronidazole 250mg TID to clear up constant loose stools, and I will also find the rare patient whose loose stools clear up with the initiation of the "Lyme" antibiotics.

The definition of IBS has been altered over time, and that has resulted in misdiagnosis. The true definition is constipation alternating with loose stools, often associated with discomfort or bloating. In the many years of treating patients... this has always been constipation promoted by "yeast" and loose stools caused by Lactose Intolerance. If I have a patient with the symptoms

of "yeast" and normal stools, the Lactose taken in is acting as a laxative, countering the tendency to be constipated from "yeast". As a result, when I begin the treatment for "yeast", loose stools will often begin to happen more regularly. Lactose intake and the pushing of fluids need to be reduced... the loose stools then resolve. As I initiate "yeast" treatment, I educate the patient on the use of milk and milk products as a useful laxative until stabilized.

The definition and diagnosis of Celiac Disease has also been altered and misunderstood over the years. It is supposed to be a disease characterized by diarrhea since birth, which resolves with the elimination of Gluten from the diet. Many people have noticed that if they go on what they think is a "gluten-free diet" there is an improvement in how they feel. With the food available in the US being what it is, one cannot go on a gluten free diet, without it being a reduced carbohydrate diet. That causes a reduction in yeast, and an improvement in many symptoms, including fatigue, pain, brain fog, vaginal, urinary tract, and GI symptoms. They should be understood to have "yeast" symptoms, (I believe) as a complication of having a "Lyme or Lyme-like infection".

Laboratory testing:

Most patients get these basic laboratory tests. I may not order some of them in the case of a pediatric patient. In the patient younger that 12 years of age, TSH, CBC, Ferritin, B12, and 25-hydroxyvitamin D is what I typically order.

Laboratory tests:

Free T3, Free T4, TSH, Comprehensive metabolic panel, Hepatitis C antibody, Magnesium, CBC with Differential, ESR, Serum Iron, TIBC, Ferritin, ANA, Rheumatoid Factor, B-12 Level, RBC Folate, CPK, RPR, 25-hydroxyvitamin D, and...

Draw, prepare, and send specimen for IgG and IgM Serum Western Blots for Lyme Disease to Stony Brook University Lyme Disease Lab. I ask that all bands be reported. http://www.stonybrookmedicalcenter.org/pathology/tick

NOTE: the IGeneX IgM and IgG Western Blots are good alternatives. I choose Stony Brook because they will bill all insurances directly (be cautious with which Medicaid they will accept) and in the very small likelihood you find a CDC positive IgG WB the result is more likely to be accepted by the "main stream" clinicians. With the IGeneX WB report an "IND" is truly there and seen by the technician, but doesn't visibly seem to be any stronger than the "Negative Control Band". To be accepted by Laboratory Quality Assurance agencies, it needs to be reported as not being a positive band. IGeneX will tell you repeating the test on another day, may result in the band becoming a "+" or a "-". But, I don't worry about doing that... I just know that that particular band may truly be important.

How to start treatment if there are no complications or patient limitations:

If it is the fall or winter (the last part of September to the end of May) and it is felt that the patient can tolerate a moderate to **severe** worsening that the Jarisch-Herxheimer reaction could cause, then one starts Tetracycline 500mg 20 – 30 min. before a meal one (to three) time (s) per day. Almost none of my patients could initially tolerate this, unless they had been partially treated previously and so most are started with Monday, Wednesday and Friday

morning dosing. No milk, milk products, or foods with added Calcium two hours before or two hours after the tetracycline. Tetracycline needs to be taken on an empty stomach, meaning no food for the previous two hours. The patient needs to avoid exposure to the sun on their skin.

If it is still the fall or winter and the person is no longer having a Jarisch-Herxheimer reaction on the Full dosing of Tetracycline, I add Amantadine. I will caution the patient on the severity of the Jarisch-Herxheimer reaction and how irritability is often a problem of that reaction with that drug. The irritability is part of the "Herx" reaction and can be quite intense. I use the Amantadine tablet 100mg from Upsher-Smith Labs, DAW. I usually start with ½ of a tablet, Monday, Wednesday, and Friday after breakfast. As the Jarisch-Herxheimer reactions abate, I slowly increase, step wise, to one whole tablet after breakfast, Lunch, and supper. This Amantadine tablet seems to be more potent than other preparations and even significantly more active than the capsule that the same company produces. After they are doing well on the TID dosing of the tablet, I will then have them switch over to the Compounded with LoxOral Amantadine 100mg TID.

If it is the spring or summer (the end of May to the last part of September), one starts Clarithromycin 500mg, from Aurobindo/Citron pharmaceuticals, DAW, and Hydroxychloroquine 200 mg, from Prasco Pharmaceuticals, one of each after breakfast and supper.

Note: there does seem to be variation from generic to generic and brand vs. generic. At this time, the Prasco Hydroxychloroquine is what I would use if a generic for the Plaquenil must be used.

The Aurobindo/Citron Clarithromycin is currently what I use as the preferred generic. I think that the Brand Biaxin may not be as well absorbed as the Aurobindo/Citron generic. I limit the Full Dose Hydroxychloroquine exposure to no longer than 6 months for adults, and 3 months for children, without at least a one month break.

Modification of Treatment Based on Certain Patient Characteristics:

The patient is not likely to be able to tolerate being much worse:

The overall plan is to start a small amount of the antibiotic that is chosen. The patient will get an increased severity of symptoms followed by a slow reduction in symptoms. As the symptoms become calm again, the antibiotic dosage is increased again. This process is continued until the person is on the full amount of the chosen antibiotic.

In assessing how the person is doing, the patient's overall impression of their response is often incorrect. After two weeks on the incremental increase in antibiotic or the starting of an antibiotic, there will be better times and worse times, if there are no other factors, such as B12, Iron, Thyroid, yeast or the patient is doing more physical activity because they are feeling better. Meaning, if there are no other factors or variables effecting the patient's symptoms, there will start to be times where the severity of the symptoms will vary from day to day or even part of a day, compared to another part, and most importantly have symptom improvement.

If there is no such change in symptom pattern, then there is another factor affecting the symptom severity. Often the patient will be unaware of not doing as badly, at times. Or, as a response to not doing as badly, they will do more physical activity, which then increases the symptoms. Patients usually remember and comment on their worst times and not on their better times. I will comment to them, if the person is 30 percent better, they will do 30 percent more and not notice any improvement.

Generally, the best time, symptomatically, should be in the morning after they limber up,

but before they start to do significant physical activity. This concept of patients reporting how they are doing is a very important one in assessing overall progress in treatment. I generally say that I think how the person feels at their best is most indicative of improvement, and how bad they are at their worst is what I use to decide whether or not they can tolerate an increase in the antibiotic.

How they feel at their worst, while on antibiotics, is proportional to how much "Lyme" is being killed off. If it has been longer than 2 weeks since starting a low dose of an antibiotic or an increase in the antibiotic dosage, and there is not significant day-to-day variation (better times and worse times), that indicates there is another factor in play.

That other factor is usually yeast. I generally review with the person their low yeast diet, and make sure they are taking the full dose of Nystatin. Or, if they are not on the yeast protocol, look for further symptoms of yeast and likely initiate the protocol. Other factors that explain this "lack of improvement" can also be low iron, anemia, B12 near or below 300 pg/ml, TSH at or above 3.6, "taking advantage of feeling better" by doing more, anxiety or anger leading to increased muscle tension (activated trigger points) and therefore more pain.

I generally educate patients on what information we will use to decide whether or not to increase an antibiotic dosage. I follow them with an appointment every 2 – 4 weeks to check for problems and see how we are doing. Patients that have been doing it long enough and know the process will come in less frequently, and I will have them call me if there is a problem, or if they think that they are doing well enough to increase the antibiotic.

If it is the fall or winter and there is no allergy to Amoxicillin, the least intensive way to begin treatment is Amoxicillin 250 mg, one time per day, on Monday, Wednesday, and Friday. I will give the medication in the morning to be able to note what the effect is. If that is not well tolerated it can be taken after supper. As the person gets through each Jarisch-Herxheimer reaction, the Amoxicillin is slowly increased. The every other day course is tolerated better that every day, as they will have a better (sometimes good) day alternating with a worse day. The ultimate goal, with Amoxicillin dosing, is 500 mg TID.

The next most aggressive way to start treatment is ½ of a 500 mg tablet of Clarithromycin from Aurobindo/Citron (63) pharmaceuticals along with ½ of a 200 mg tablet of Plaquenil on Monday, Wednesday, and Friday mornings. We would slowly work up on the dosing. The every other day dosing can result in the patient having a very good day alternating with a not very good one.

The next most aggressive approach that can be started during the fall or winter is Tetracycline 250 mg 20 – 30 minutes before supper on Monday, Wednesday, and Friday. Again, we work up on the dose, as one can. The Jarisch-Herxheimer reaction lasts the longest and is most intense with tetracycline. One can reduce the amount of Tetracycline absorbed even further... or reduce the odds of stomach Symptoms/Heartburn by giving the Tetracycline just at the end of the meal.

Yeast is treated with a low yeast diet and working up to Nystatin 500,000 unit tablets, Two QID right after breakfast, lunch, supper, and a bedtime snack. The Nystatin should be from Mutual/Sun (MP83) Pharmaceuticals DAW or Compounded with LoxOral One Million Unit Capsules One QID. I have found Heritage (HP) and Teva (93) to not be effective. As the person starts the low yeast diet or each time the Nystatin is increased or started, the person may have a worsening of symptoms that is called a "die-off" of yeast. After the person is stable on the Nystatin I add Fluconazole 200 mg from Greenstone (FLZ 200) Pharmaceuticals DAW, one twice per week.

Only attempt this diet under a doctor's supervision.

This Diet is to Reduce the Carbohydrate intake in order to Reduce the Amount of Yeast It is to Increase Protein and Reduce Carbohydrate without reducing calories.
The large majority of what you eat should be protein, with a lesser amount of some Vegetables, and some of the Ezekiel 4:9 Tortilla as a Fiber and Carbohydrate Source.

It is essential that you read the ingredients label of ALL that you eat and drink.
Eat enough and often enough to not be hungry!!

Avoid the Ingredients: Sugar, Splenda, Sucralose, Cane, Sucrose, Honey, Maple Syrup, Alcohol, Corn Syrup, Molasses, and Beet Sugar

Foods that are best to eat and are low in carbohydrates ("good foods"):

Meats, Fish, Shrimp, Lobster, Real Crab, Chicken, Pork, Lamb, Turkey, and Eggs, with no additives and that have not been processed, (avoid deli meats, avoid bacon, avoid ham, avoid sausages, avoid chicken and turkey with infused carbohydrate).

Foods that are "OK" but, higher in Carbohydrate and are to be eaten in much smaller amounts:

Tofu, Soybean products, I.M. Healthy Unsweetened Creamy SoyNut Butter, Celery, Broccoli, Iceberg and Romaine Lettuce, Spinach, Green Beans, Wax Beans, Cucumbers, White Mushrooms, Radishes, Asparagus, Green Pepper, Certain Mustards (check ingredients), Olive Oil, Food For Life brand Ezekiel 4:9 **Tortillas**(www.foodforlife.com), Dukes Mayonnaise (www.dukesmayo.com), Wild Selections Solid Light Tuna (not Albacore) in Water, Knox Gelatin.

If extra calories are needed, try white rice or white potatoes, but watch for worsened yeast symptoms.

Spices are ok, if you are not on the Bland Diet, if you read the ingredients labels carefully, and if there are no Heartburn or Stomach Symptoms.

Some of the foods that should be avoided, because they will all worsen yeast symptoms: Breads, Pastas, Cakes, Cookies, Nuts and Seeds (all kinds), Almond Milk, all Milks from Nuts, Rice milk, Coconuts, Coconut Milk, Fruits, Crackers, Cereals, Rice, White Potatoes, Sweet Potatoes, Corn, Peas, Red or Yellow Peppers, Succotash, Turnips, Carrots, Tomatoes, Squash, Artichokes, Avocados, Beets, Brussel Sprouts, Egg Plant, Kale, Onion, Parsnips, Beans other than Green beans or Wax beans, Mussels, Oysters, Lunch Meats and Other Processed Meats, Milk and Milk products, Cheese, and many more not yet on the list.

Diarrhea:
Usually means that there is lactose intolerance present and milk/milk products should be avoided. Occasionally, one would need Metronidazole 250 mg TID for 10 days or longer. At times it can be from a medication, polydyspsia, or some food that is too osmotic, such as fruits or certain vegetables.

Constipation:
Usually means yeast, and the patient should be treated for that.

Constipation, alternating with Diarrhea (IBS):
Usually means there is lactose intolerance combined with yeast. The patient should be treated for both.

Crampy, painful abdomen (IBS):
Usually it is from lactose intolerance, often with yeast. Rarely, it is from a parasite, such as roundworm or tapeworm.

GERD/Heartburn:
Usually means, a spicy diet and yeast. At times it can be from NSAIDs. Initiate a bland diet (see below) and if there is any suggestion of yeast initiate treatment for that. Use Nexium or Prevacid if a bland diet and the yeast treatment didn't work. Nexium 40mg at bedtime is the best place to start if a medication is needed. Prevacid 30 mg is next best choice. Use BID if needed. If the insurance balks on BID treatment, one can try 20 or 40 mg omeprazole in the morning and the Nexium or Prevacid at bedtime. The PPIs work best on an empty stomach. If the person has had GERD symptoms for over 6 months, 2 to 3 times per week an endoscopy to rule out Barrett's esophagitis is indicated. The main motivation for avoiding the use of a GERD Rx is that it will interfere with the absorption of the antibiotics, esp. tetracycline.

BLAND DIET

Foods to avoid:

Coffee or Tea… All kinds

Sodas…. All kinds

Tomatoes and Tomato Products

Spices, Onions, and Garlic

Alcohol

Vinegar

Peppers…. All kinds

Acidic Fruits

Fruit Juices

Over Eating

Chocolate

Any other food that seems to irritate the stomach or give heartburn

Nausea:
Usually means the patient has yeast. It can also mean some gastritis and the need for GERD treatment.

The patient is on narcotics:
They are best to avoid if at all possible. They cause a reduced prognosis for being ever able to get the patient off of narcotics, and may contribute to constipation. It is best to keep them at their higher therapeutic levels until the patient is "well". It will reduce the severity of the Jarisch-Herxheimer reaction and it may even mask it.

The patient is on an antidepressant, esp. an SSRI:
As the person gets better and better, the SSRI is more likely to cause more anxiety and disturbed sleep and will need to be reduced or stopped completely.

The patient is not good at remembering to take medications:
Use a medication alarm/box found at epill.com

Abdominal pain:
Usually related to yeast and or lactose intolerance. It could be the gall bladder if in the RUQ of the abdomen.

Abdominal bloating:
Bloating usually means yeast, at times constipation, esp. if there is discomfort in the ULQ of the abdomen. Don't forget about ovarian cancer or pancreatic cancer.

Cravings for Carbohydrates or sweets:
Means yeast and the patient should be treated for yeast before initiating antibiotics.

Acne:
Means yeast and the patient should be treated for yeast

Pruritis:
Can be from yeast, or part of a Jarisch-Herxheimer reaction, or an allergy.

B12 insufficiency/deficiency:
If the level is at 300 pg/ml or below, add 500 micrograms of B12 by mouth each day, and work up to 1000 mcg in the morning. As the B12 is first started and also at each increase, the patient my feel worse. The need for B12 usually resolves itself as the Lyme is effectively treated, but B12 levels should be followed after discharge. I may only give 500 micrograms or 1000 micrograms each day, if the person is not "deficient" and only below 300 pg/ml. Since the B12 can inhibit the killing of "Lyme", I try to wean the person off of it, checking the level along the way.

Folate Deficiency:
Rule out ETOH abuse, 1 mg Folate for 3 months, follow up Folate level one month after stopping, and perhaps each year by the patient's primary clinician.

Anxiety or Depression:
Lexapro is best for mood only. The brand Zoloft is best for pain, sleep, and mood. Paxil can help with anxiety and sleep, but is less therapeutic for getting a restful sleep than Zoloft. The generic Sertraline is not as good as the brand Zoloft. Sertraline from Greenstone Pharmaceuticals is best. Paxil also can have a nasty withdrawal/discontinuation syndrome problem. The brand Lexapro works better than the generic. The brand Paxil works better than the generic, paroxetine.

Need to improve on pain:
Neurontin, if there is no mood problem. If there is a mood problem with a sleep problem, I add Zoloft, and then perhaps use Neurontin or Klonopin at night. Keep in mind, that the SSRIs, Neurontin, and other symptom modifying medications can mask the symptoms of a Jarisch-Herxheimer reaction. Klonopin works better than the generic, clonazepam. After the patient has improved for awhile the Gabapentin or Neurontin can start increasing pain and reducing sleep

TSH above 3.6:
Consider adding Synthroid in the morning and titrating to a TSH of around 1, or at least below 3.6. Be sure the patient takes thyroid supplementation at least one hour before breakfast, and avoids calcium carbonate, including Tums and what might be in a multivitamin. If the person is on a multivitamin, I have them take it at bedtime. I will definitely treat with thyroid if the TSH is above normal. If it is normal and above 3.6, I may just check it again.

Vitamin D insufficiency or deficiency:
If the vitamin D is below 15, give 50,000 IU of vitamin D twice per week for three months and start 1200 mg of Calcium Citrate along with 2000 IU of vitamin D at bedtime. At the fourth month check the vitamin D level. If the level were between 15 and 20, one would use the same procedure except I use 50,000 IU of vitamin D one time per week. If the level is 20 or above, I would just add the vitamin D and Calcium Citrate at bedtime. I choose Calcium Citrate as it is less constipating and it will not interfere with thyroid supplementation, as Calcium Carbonate will. I choose the bedtime dosing so that the Calcium will not interfere with the antibiotics and have them take the 2000 IU of vitamin D at bedtime in case they switch to a combination preparation. It should be discussed with the patient that Calcium Supplementation can increase the risk of kidney stones.

Sleeping very poorly:
In most cases using the Brand Zoloft (or Sertraline from Greenstone Pharmaceuticals) at supper or before bed, combined with using the brand Klonopin at bedtime works. If pain is a major issue, still one can add at bedtime the brand Neurontin. Watch for the Sertraline/Zoloft and Neurontin/Gabapentin eventually start to stimulate the person worsening anxiety, pain, and sleep.

Anemia:
Patients may describe an “I can’t get out of my own way, fatigue”. If the patient is a female, check for heavy menstruation and check 6 stools for occult blood. In the male or non-menstruating female check 6 stools for occult blood. If the anemia is associated with an iron deficiency, after the stool samples have been collected, start 325mg of Ferrous Sulfate at bedtime or also at 3pm. A CBC, serum iron, TIBC, and Ferritin should be checked about every three months, after holding the iron for one week. If the anemia is not associated with an iron deficiency, B12 or Folate deficiency a Hematology consult should be considered.

Iron deficiency:
Don't treat, unless it is moderate to severe, associated with anemia, or if the patient describes an "I can't get out of my own way, fatigue". Treat with Ferrous Sulphate 325mg at bedtime or 3 pm and bedtime. A CBC, serum iron, TIBC, and Ferritin should be checked about every three months, after holding the iron for one week.

Vaginal Irritation:
If recurrent or chronic start the yeast protocol. If on the yeast protocol, make sure that it is being followed well. May treat with Monistat 7 each night until the symptoms are resolved and then continue using it every other night for prevention. May need to add Fluconazole or Diflucan to regimen. If Monistat 7 doesn't work or is not tolerated one can try Terazol 7, instead. If the yeast treatment doesn't help, a bacterial infection should be suspected and metronidazole may need to be used.

Urinary Frequency or urgency:
Rule out a UTI with a U/A and a C/S. If there is no UTI consider treatment for yeast.

Multiple Sclerosis or ALS type of weakness or paralysis:
These patients are very sensitive to the Herx reaction and may not recover from the weakness it may cause. They also are very likely to have yeast as a major contributor to the symptom complex. I very carefully treat them for yeast. Then I very slowly treat with Amoxicillin. I would then switch to Cefdinar, working up to 300 mg BID. I would then slowly add Plaquenil to either the Amoxicillin or Cefdinar. I believe the Beta-lactam has a stabilizing effect and is therapeutic at the same time. I would then try and introduce the standard antibiotics and may continue with the Beta-lactam antibiotic while doing that. I will very often have them take a multivitamin.

The patient is not having better times and worse times. They feel about the same every day:
One should very much suspect yeast. Next most likely thing is doing too much activity. The patient may report this inaccurately. Patients don't usually pay attention to how they feel at their best; they only pay attention when the symptoms are limiting them. Often stress/fear/anxiety will cause this pattern. And, finally one can suspect anemia, iron deficiency, B12 being low, or a thyroid problem.

The worsening of symptoms from the Jarisch-Herxheimer Reaction is not starting to improve after two weeks:
If things had been going well just a few weeks earlier, it is either yeast, or the patient is "taking advantage of feeling better by doing more".

Sinus infection:
It is often associated with yeast problems and the patient may need to be treated for yeast. If they are recurrent, one should suspect yeast and allergies. Otherwise it is best treated with some weeks of Augmentin 857mg BID or Zithromax 500mg x 1, and then 250mg each day for a number of days to weeks. Note that the brand Augmentin seems to be better than the generics and Zithromax seems to be less likely to cause nausea than the generic. These antibiotics are also useful in treating "Lyme" and may cause a considerably intense "Herx", especially the Augmentin. The best treatment for allergies seems to be Allegra, Flonase, and the real Sudafed.

Below normal magnesium level:
It can be treated with 400mg of Magnesium Oxide or a significant amount of Magnesium Chloride at bedtime. I suspect the low Magnesium is induced by the immune system. It will reduce muscle pain and attenuate symptoms artificially. There is a new warning about Hypomagnesaemia contributing to cardiac arrhythmias in using Clarithromycin.

Hair loss:
I will usually add one or two Centrum A – Zinc tablets at bedtime. Severe hair loss such as the loss of eyebrows may be due to a severe iron deficiency. Sometimes all that is needed is B-Complex, but I tend to use the Centrum. The response might take two months, and is worse during a "Herx".

Painful tongue:
In examining the mouth, try to rule out thrush. If it is not thrush, a "geographic tongue" may accompany it. I generally think this is due to one or more "B" vitamins being too low. So, I will use Centrum A-Zinc, sometimes with extra B-complex. The Centrum needs to be taken at night to avoid it interfering with other medications. I will also make sure that the treatment for yeast is being done effectively. Once the "Herx" is over and the tongue is doing better, the vitamins can be stopped.

The patient is going to have surgery:
Patients that have "Lyme disease" will often have difficulty with healing, so 6 weeks before surgery I will start 2 Centrum A-Zinc at bed time. If the person is going to have surgery in an area that is cosmetic, I may also add 500mg of vitamin C, some B-complex, Vitamin A, and some Zinc. I will continue with the Vitamins until 6 weeks post-op. I will have the patient check with the surgeon to make sure they are ok with this. I will try and time any starting of an antibiotic or an increase in the antibiotic, such that the patient would mostly be recovered from the "Herx" by the time of surgery. I generally wait until the surgical areas seem to be well healed before increasing or changing antibiotics.

Co-infections:
For the most part I think this protocol should take care of the most common co-infections. The exception may be Babesiosis. And, it is possible that the spring and summer medications may help with that. Also, I do think the Babesiosis is unlikely to be able to be treated effectively until the "Lyme" is well in hand. If I do suspect Babesiosis, due to unusually heavy sweats, chills, and feeling feverish, I will treat with 500mg of azithromycin x 1, and then 250mg x 6 (500mg take one and then ½ pill each day #4), with atovaquone (Mepron) 750mg/5ml, 5ml BID for 7 days (#80ml). I repeat this protocol if the benefit of the treatment seems to have worn off after a while, such as in a few months or years. Particularly for Babesiosis, the patient's immune system may not be able to adequately clear a co-infection, until enough progress has been made with the "Lyme".

The patient is not well (but, much improved), but has stopped making progress:
As mentioned earlier, if the patient is doing pretty well, but has not made progress for a month or two, we might stop the antibiotics (to make the bacteria start to "come out and play"). After the patient gets significantly worse, we restart the antibiotics. The patient will then start to make progress again.