

The Treatment of TBD in the

Pregnant and Pediatric Patient

April 20, 2013

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Borrelia Biofilms

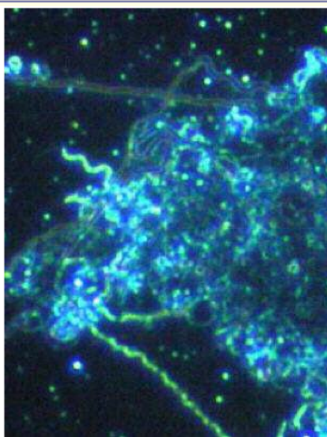


Figure 1 *Borrelia burgdorferi* in pure culture from American Type Culture Collection (35210) in BSK-M medium (Sigma Aldrich), darkfield 1000x original magnification. Conventional spiral forms merge with biofilm elements including cystic rounded forms, tubular elements and dot-like punctate granular forms in a gel matrix.

Eva Sapi PhD and Alan
MacDonald MD

*Biofilms of Borrelia
burgdorferi in Chronic
Cutaneous Borreliosis*

American Journal of Clinical
Pathology
AJCP-2008-01-0002

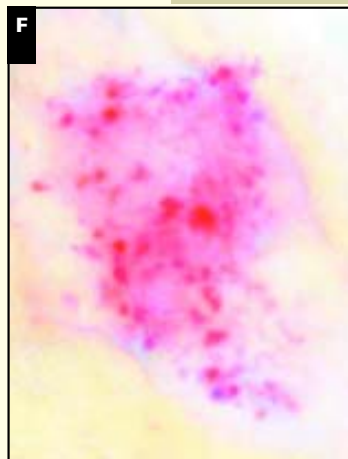
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Borrelia Biofilms

- Eisendle et al., Focus Floating Microscopy “Gold Standard” for Cutaneous Borreliosis? *American Journal of Clinical Pathology* 2007; 127(2): 213-222
- Eisendle et al., Morphea, a manifestation of infection with *Borrelia* species. *British Journal of Dermatology* 2007; 157:1189-1198
- Eisendle et al., The expanding spectrum of cutaneous Borreliosis. *Giornale Italiano di Dermatologia e Venereologia* 2009; 144:157-171



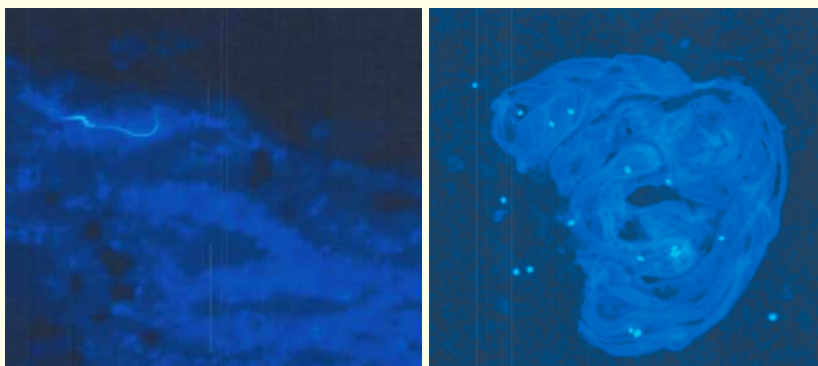
Am J Clin Pathol 2007;127:213-222, 219

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Protozoan Biofilms

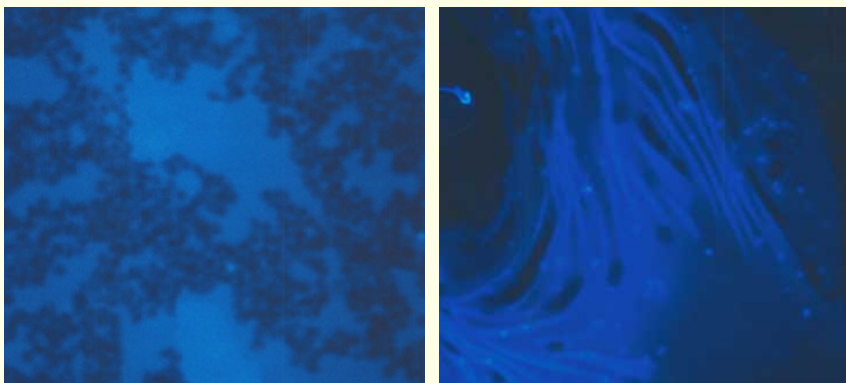


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Protozoan Biofilms

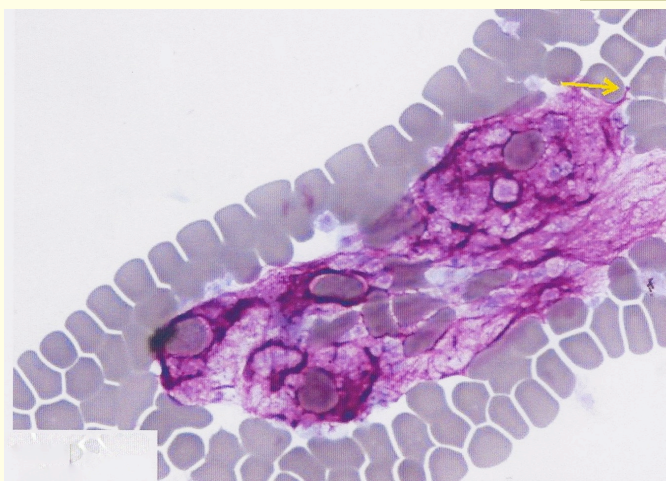


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Protomyxzoa Biofilms

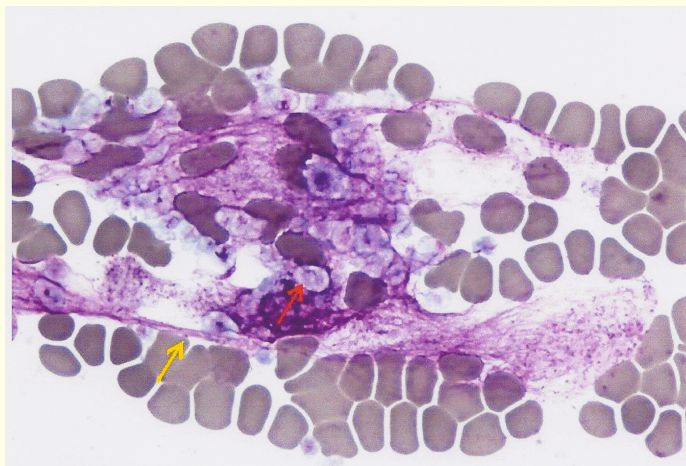


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Protomyxzoa Biofilms



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TBD Patient Complexity

- Polymicrobial biofilms of all organ systems
- Gut dysbiosis
 - Fungal dominance
 - Parasites
- Systemic inflammation
 - Need for immune modulators
- Hypercoagulability
 - Need for SQ heparin, fibrinolytic and proteolytic enzymes

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TBD Patient Complexity

- Immune system dysfunction
 - Anergy and/or confusion of gastrointestinal (GALT) and/or mucocutaneous (MALT) associated lymphoid tissue
 - Th1/Th2 balance
 - Allergic up regulation
 - Environmental
 - Food
 - MCS – always biotoxin patients
 - Autoimmunity
 - thyroid, connective tissue, endothelium, brain

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TBD Patient Complexity

- Biotoxin illness
 - Ionophoric toxins
 - mold, Borrelia, protozoan, algae
 - Genetic predisposition
 - Leptin and Pro-opiomelanocortin system disruption
- Kryptopyrroluria/Hemopyrrolactamuria
 - Supra-physiological loss of Zn, Mn, Mg, B-6, others
- Liver detoxification faults
 - Genetic mutations, e.g. MTHFR
 - Acquired, e.g. gut dysbiosis, toxins, infections

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TBD Patient Complexity

- Mitochondrial dysfunction
 - Infection, drug or nutritionally induced
- Toxic encumbered matrix
 - Immune system debris such as Ag:Ab complexes
 - Heavy metals and other pollutants
- Polymicrobial biofilms of all organ systems

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Evaluation of TBD Patient

- History
 - Family history
 - Biological parents, siblings
 - Family dynamics/nuclear family arrangements
 - Social history
 - Nutritional habits
 - Mold in home, school, work environments
 - EMFs in home, school, work environments
 - Pets, past (mother's pets) and present
 - Travel history

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Evaluation of TBD Patient

- History
 - Risk factors for TBD
 - Domiciles
 - Travel
 - Complete medical history
 - Detailed history from pre-conception to present
 - History of present illness
 - Review of symptoms
 - Trauma history (physical and emotional)
 - Surgical, dental, manipulative procedures (orthodontics)

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Evaluation of TBD Patient

- Physical examination
- Laboratory evaluation
 - TBD labs
 - Igenex, Fry Labs, MDL, Advanced Lab Service, Galaxy Diagnostics, Lab Corp CD57
 - Medical work up
 - CBC diff, CMP, TFTs, UA
 - HLA typing DRB1, DQ1, DRB3-5 (biotoxin work up: MSH, VIP, ADH, TGF-b1, MMP-9, C3a, C4a)
 - Hypercoagulability
 - Autoimmunity

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Evaluation of TBD Patient

- Laboratory evaluation, cont.
 - Hormonal evaluation
 - Thyroid, adrenal, gonadal
 - Food allergy assessment
 - IgG vs. ELISA Act
 - Stool analysis - CDSA
 - Heavy metal challenge
 - KPU testing
- Home, school, work: analyze for mold, toxins
 - ERMI as well as plate, air, tape, dust testing

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Pregnancy - Management

- Maternal health and treatment
 - Nutrition
 - Organic diet - limit sugars and grains
 - Anti-inflammation diet
 - Gut health
 - Starts in mouth
 - Teeth care, floss, non-toxic toothpastes, no aggressive cleaning or amalgam work while pregnant or nursing
 - Keep bowels moving
 - Support liver/GB, probiotics

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Pregnancy - Management

■ Maternal health and treatment, cont.

■ Supplements

- MVI for pregnancy
 - Rx brands not always best
- DHA – most important EFA
- B-vitamins, folate
 - Check MTHFR gene analysis
- Trace minerals
- Mitochondrial resuscitation
 - Researched Nutritionals' ATP fuel

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Pregnancy - Management

■ Maternal health and treatment, cont.

■ Limit maternal toxic exposure

- Mold, other environmental toxins
- Skin, hair, nail products

■ Drainage and regulation medicines

- Pekana, Nutramedix, Energetix

■ Antimicrobial treatment entire pregnancy

- Azithromycin 600 mg daily
- Cell wall antibiotic
 - Amoxicillin, cephalosporin (Ceftin, Omnicef)

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Pregnancy - Management

- Maternal health, cont.
 - Safe in pregnancy: PCN, cephalosporins, azithromycin, atovaquone
 - Not safe in pregnancy: quinolones, clarithromycin, tetracyclines, metronidazole, trimethoprim-sulfamethoxazole
 - Herbals in pregnancy
 - Check with each individual company
 - Chrysanthemum – Vital Guard Supreme Supreme Nutrition

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Breast Feeding

- Continue antimicrobial and supplements
 - Replace azithromycin?
- Continue to limit toxic exposures
- Treating mother can treat baby

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Testing at Birth

- Cord Blood
 - Advanced Labs Borrelia culture, Galaxy Diagnostics for Bartonella
 - Fry Labs smears (both) and PCR FL1953
 - Igenex PCRs for TBDs
 - PCRs for other infectious organisms
 - EBV, HHV-6, Parvo, Chlamydia, Mycoplasma
- Baby's urine for Bb PCR
- Placenta and foreskin biopsies for Bb PCR
- Serologies not helpful

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Initial Infant Evaluation

- History
 - Labor and delivery
 - Apgars, temperature and glucose control, jaundice, breast or bottle
 - Immunizations
 - Feeding, sleeping, voiding, stooling patterns
- Physical examination
 - Birth marks, cry, skin color and temp, muscle tone, skin infections (cradle cap, diaper rash), suck, grasp, hip click, red light reflex, defects

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Subsequent Infant Evaluation

- Sequential examinations bimonthly
- Follow baby's urine for Bb PCR monthly for first 6-12 months
- Again, serologies not helpful until after about 6 months
- Follow for normal growth and developmental stages – best thing you can do for baby is keep mother healthy!

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Pediatric History Taking

- Maternal health at time conception and throughout pregnancy.
- SVD versus C-section
 - Coming through birth canal gives baby exposure to good and maybe bad pathogens
- Neonatal issues
 - Elevated bilirubin, glucose and temperature regulation
 - Traumas, illnesses in first 12 weeks life

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Pediatric History Taking

- First year of life – or from birth until walking
 - illness, injuries, surgeries
- Toddlerhood – from walking to starting school
 - Illness, injuries, surgeries
- Elementary school
 - Illness, injuries, surgeries
- Middle school
 - Illness, injuries, surgeries
- High school.....

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German Biological Medicine Treatment Principles

- Restore vitality
 - Rebuild vital heat and energy
- Restore health and function of matrix
 - Clear toxicity, hypercoagulability, biofilms, infections, scars, restoring communication and fluidity throughout extracellular matrix
- Restore metabolic function of
 - Intestine, liver, kidney, bone marrow
- Restore regulatory function to
 - Neuro-immune, neuro-endocrine and vascular systems

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Treatment - Management

- Vaccinations
 - Delay several months, one at a time
 - Preservative free – single use vial
 - Prevent reactions
 - Homeopathics (Thuja)
 - Phosphatidyl serine pre and post
 - Vaccine resources:
 - National Vaccine Information Center - <http://www.nvic.org>
 - <http://www.cdc.gov/vaccines>

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Treatment - Management

- Vaccine resources, cont.
 - http://www.naturalnews.com/Vaccines_Get_the_full_story.html
 - Dr. Joseph Mercola's website: <http://search.mercola.com/search/Pages/results.aspx?k=vaccines>

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TBD Patient Responsibilities Basics

- Tick avoidance
 - <http://lymedisease.org/lyme101/prevention>
- Toxin avoidance in home, work, school and automobile
 - Chemicals are everywhere
 - Household cleaners, personal care products of all kinds including toothpastes, soaps, shampoos, hair dyes, nail polish, lotions, cosmetics, cigarette smoking, alcohol, non organic and processed foods, water, air

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TBD Patient Responsibilities Basics

- Clean air
 - Purifiers
- Clean water
 - www.mercola.com - water testing
 - Deluxe test kits for city and well water
 - Proper pH – 8.0 best
 - Drinking bottles
 - HDPE, stainless steel or glass only
 - NO single-use PET or polycarbonate bottles
 - Allows growth of biofilms, leach xenoestrogens

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TBD Patient Responsibilities Diet

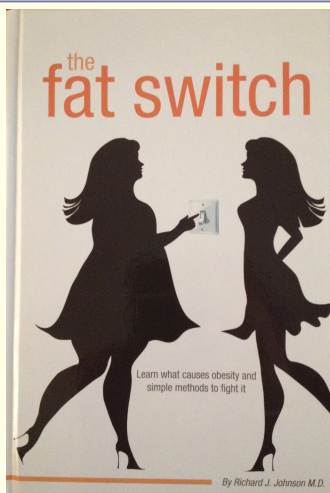
- Dietary compliance is of utmost importance
 - Paleolithic oligoantigenic principles (GAPS)
 - Fully organic
 - Grass fed meats, free range poultry, wild fish
 - No processed food, no GMO, no HFCS
 - Limit sugar to fresh fruit, no dried/frozen fruit
 - Limit grains of all kinds
 - Often need to avoid gluten, dairy
 - Food allergies, common and shifting
 - Elisa Act test most useful test

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TBD Patient Responsibilities Diet



- **NO** HFCS
- No dried fruit
- Limit sugar to fresh fruit
- Fructose's bad effects:
 - Activates fat deposition
 - Insulin and leptin resistance
 - Blocks satiety signals
 - As addictive as narcotics
 - Creates oxidative stress
 - increases uric acid

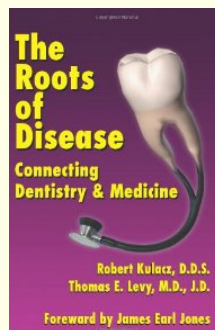
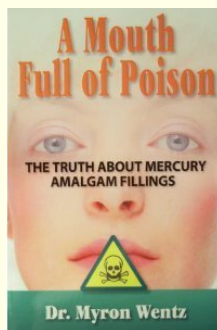
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TBD Patient Responsibilities Toxins

- Toxic heavy metals
 - Amalgam removal by biological dentist - www.iabdm.org



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Appendix 1 Pediatric antibiotic dosing

- Amoxicillin 50-100 mg/kg BID e.g. 400 BID for 2-3 y/o
- Bicillin 1.2 million units IM weekly in over 7-8 y/o, up to twice weekly, depending on size of buttocks (limiting factor in using Bicillin is size of buttocks muscles) using 3/4" needles
- Omnicef 125-250 mg BID up to 100 lbs
- Cedax under 8 y/o 90 mg BID, over 8 y/o up to 180 mg BID
- Ceftin 125-250 mg BID up to 100 lbs

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Appendix 1 – Dr. Jones' Pediatric antibiotic dosing

- Ketek 400 mg 6 y/o and up (I've given it as young as 4y/o with excellent results) Get EKG before and 3-4 days after starting treatment check PR interval
- Zithromax 100 mg to 250 mg BID
- Biaxin 125-250 mg BID Careful: Biaxin can cause psychosis
- tinidazole can be given as young as 1-2 y/o at 125 mg BID, older 250 mg BID (2 consecutive days/wk)
- Flagyl 125 mg BID 1-3 y/o, older 250 mg BID
- Rifampin, ask pharmacist to make suspension 30 mg/ml. Dose at 10-20 mg/kg up to 600 mg daily

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Appendix 1 – Dr. Jones' Pediatric antibiotic dosing

- Plaquenil 100-200 mg BID, especially if 31 or 39 kDa bands present as these often associated with high degree of autoimmunity. (I also use Plaquenil if a lot of joint pain is present due to its anti-inflammatory as well as anti-Borrelia effects)
- Mepron, use highest dose tolerated 1/2 to 1 tsp BID
- Minocin or doxycycline over 8y/o use 50-100 BID (I have pushed Minocin to 300 mg/day in 9-12y/o) Minocin can cause increased ICP with papilledema (PTC), especially in peri-pubescent girls)

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Appendix 1 – Dr. Jones’ Pediatric antibiotic dosing

- Ciprofloxacin 250 - 500 mg BID. Ciprofloxacin often tolerated as young as 12 y/o. (I have used it as young as 8 y/o successfully)
- Cannot use Levaquin or Avalox in children as they have more tendon/muscle problems than adults
- Cholestyramine resin dosing in under 100 lbs or under 12 y/o give 60 mg/kg per dose
- “Sleepers” to use in kids: Benadryl, chloral hydrate, Sonata (over 6 y/o), benzodiazepines, melatonin cream or spray

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Appendix 1 – Dr. Jones’ Pediatric antibiotic dosing

- IV Rocephin 75 mg/kg up to 2 gm QD
- IV Zithromax 200-400 mg QD in over 12 y/o
- IV doxycycline rarely used by Dr. Jones in kids
- IV Claforan 100 m/kg up to 2 gm/dose BID (can suppress bone marrow causing decrease in WBC and RBC)
- IV Primaxin OK in kids, crosses BBB better than PCN

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Appendix 2 – Dr. Jones' Pediatric dosing caveats

- For Ehrlichia: in kids under 8 y/o use 1-4 wks of doxycycline 1/2 tsp BID
- For Bartonella: in children under 8 y/o use rifampin and Bactrim together for 1 wk to 3 months. Also use Bactrim and Zithromax or Rifampin and Zithromax
- For Borrelia: Zithromax and rifampin often good in combination, e.g. for 85 lb 10 y/o dose would be rifampin 150 mg BID and Zithromax 250 mg BID
- For Borrelia: Zithromax (intracellular) and cephalosporin or PCN (CWAbx) in combination
- For Mycoplasma fermentans: Rifampin and Zithromax or Bactrim and Zithromax

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Appendix 2 – Dr. Jones' Pediatric dosing caveats

- For autism symptoms: Flagyl and Zithromax often good in combination
- For neurological tics: clonidine 0.1 mg QD
- With unrelenting HA and paresthesias think Babesia co-infection
- Safe in pregnancy: PCN, cephalosporins, Zithromax, Mepron
- Not safe in pregnancy: quinolones, Biaxin, tetracyclines, Flagyl, Bactrim

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Appendix 2 – Dr. Jones’ Pediatric dosing caveats

- Dr. Jones has treated children with anywhere from 3 months to 10 years of continuous antibiotics. He does not pulse treatment, but always uses continuous antibiotic therapy. Duration of treatment is based on the child’s symptoms. Continue antibiotics for a full 2 months after all symptoms have resolved, and until there is no recurrence of Lyme symptoms with concurrent infections, injury/trauma, surgery, emotional trauma or menses. Also treat until the child him/herself feels that the “Lyme bugs” are gone.

Always ask the child what he/she thinks!

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Appendix 3 Needs of sick children

- Social impact
 - Symptoms fluctuate so friends, family and teachers often don’t believe the sick child
 - Isolation
 - Loss of peer group and normal socialization
 - Loss of academic work
 - Loss of self-esteem

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Appendix 3

Needs of sick children

- Physical impact
 - Children feel sick, they hurt, their brains don't work
 - Inability to participate in sports or other extracurricular activities
- Family impact
 - Interruption of normal family life, stress on working parents and siblings

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Appendix 3

What can schools do?

- Children with persistent neuroborreliosis need
 - Appropriate medical, psychological and educational assistance
- Allow for individual education plans
 - Late arrivals, early dismissals
 - Flexibility in assignment due dates
 - Removing time limits from test taking
 - Allow course auditing or changes
 - Tutor support at school or home (on-line)

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Appendix 3

What can parents do?

- Make sure schools are abiding by the two Federal laws that protect students with Lyme disease and supercede state codes and regulations:
 - IDEA: Individuals with Disabilities Education Act www.idealpractices.org
 - Section 504 of the 1973 Rehabilitation Act www.504idea.org

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Appendix 4

Prevention

- Avoid exposure to tick habitats
 - Damp, shade, edges, wood, rocks, tall grass
- Clear away underbrush, cut back shrubbery
 - Wood chip boundary, play set location
- Get the deer out of your yard
 - Fences, repellants
- Spray with natural or synthetic insecticides
 - Timed spring and fall
- Damminix® or Maxforce® for mice
 - Kill larval and nymphal ticks

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Appendix 4 Prevention

- Wear protective clothing
 - Shirts and pants tucked in, hats, permethrin-impregnated
- Use appropriate insecticides while outdoors
 - DEET
- Treat tick exposed domestic animals with topical insecticides regularly
- Lobby local government regarding tick and deer control and elimination

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Appendix 4 References

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<https://sites.google.com/site/marylandlyme/pregnancy-lyme/gestational>

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Appendix 4

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Infectious Diseases of the Fetus and Newborn Infant, 2001 5th edition, Ed. Remington and Klein. Tessa Gardner: Chapter 11, page 447 – 528.

“Mothers with active Lyme Disease: Treated: 14.6% of the pregnancies with sequelae, Untreated: 66.7% of the pregnancies with sequelae, Unknown as to treatment: 30.3% with sequelae, Specific adverse outcomes included: cardiac 22.7%, neurologic 15.2%, orthopedic 12.1%, ophthalmic 4.5%, genitourinary 10.6%, miscellaneous anomalies 12.1%, 2nd trimester demise 12.1%, Highest rate of adverse outcome (72.7%) in women with infection acquired prior to or during first trimester without treatment.”

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References

“Risk of transmission varies by trimester, thus decision-making re antibiotic choice may be influenced by the trimester in which exposure occurred. Highest risk of adverse congenital sequelae occurs in the first and early second trimester. Per Tessa Gardner's compilation of studies of gestational exposure (Infectious Diseases of the Fetus and Newborn, Chapter 11, 5th ed, 2001): "...[some] recommend longer duration of antibiotic therapy in gestational Lyme borreliosis because of concern about transplacental spread...Other investigators recommend more aggressive therapy, such as IV antibiotic therapy,”

Tessa Gardner, 2001 Infectious Disease of the Fetus and Newborn Infant, 5th ed. ch. 11

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Appendix 4 References

“...for all cases of gestational Lyme borreliosis because of concern that there is a significant potential risk to the fetus, which is not yet fully appreciated, following any gestational Lyme borreliosis infection; also, they believe that high-dose intravenous antibiotic therapy is more successful at achieving antibiotic levels above the MIC of the spirochete on both the maternal and fetal sides of the placenta, and that parenteral antibiotic therapy should be considered for some patients with gestational Lyme borreliosis, particularly in those with first- or early second-trimester or disseminated gestational Lyme borreliosis.....”

Tessa Gardner, 2001 Infectious Disease of the Fetus and Newborn Infant, 5th ed. ch. 11

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Appendix 4 References

"There are investigators who favor more aggressive therapy for gestational Lyme disease. The National Institute of Arthritis and Musculoskeletal and Skin Diseases and the National Institute of Allergy and Infectious Diseases recommend consideration of intravenous antibiotic therapy for first-trimester gestational Lyme borreliosis, and routine therapy according to guidelines for the clinical stage of disease for other trimesters. Podolsky suggests that intravenous ceftriaxone may provide greater protection for the fetus than oral penicillin....”

Tessa Gardner, 2001 Infectious Disease of the Fetus and Newborn Infant, 5th ed. ch. 11

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Appendix 4 References

- Dropbox link to Gardner's chapter in 2 pdfs
- Mancuso et al., An Unusual Case of Transient Psychosis from *Ehrlichia* Infection, Osteopathic Family Physician, July 2012, (4): 4, p. 124-127.
- Breitschwerdt et al., Molecular Evidence of Perinatal Transmission of *Bartonella vinsonii* subsp. *berkhoffii* and *Bartonella henselae* to a Child. Journal of Clinical Microbiology, June 2010, (48):6, p. 2289–2293.