



A Natural Approach for Infertility

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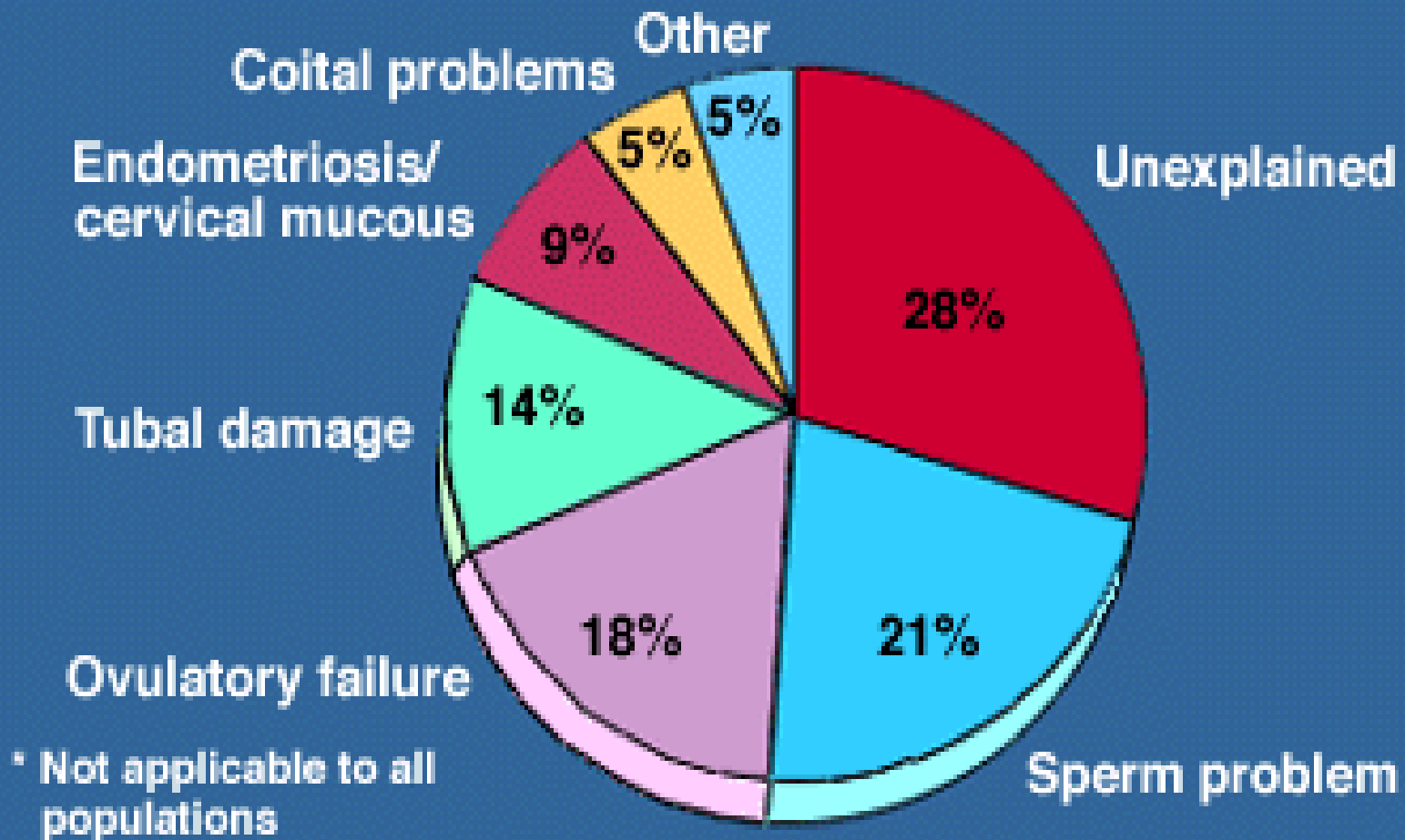
Agenda

- Introduction to infertility
- Causes of infertility
- Laboratory testing
- General Treatment Options
- Highlight one 'unexplained' cause -Methylation defects- and its effect on fertility
- If time permits – A throwback to 2012

What is infertility?

- a woman **under 35** has not conceived after 12 months of contraceptive-free intercourse
- a woman **over 35** has not conceived after 6 months of contraceptive-free intercourse
- 25% of couples will have trouble conceiving

Prime Causes of Infertility*



Treatment Options

- Surgery for structural abnormalities
- Ovulation induction with Fertility Drugs
- Intrauterine Insemination
- In Vitro Fertilization
- **Natural Treatments** – Should be a part of preconception care and/or first line of treatment but is often bypassed
 - *** part of the natural treatment is finding the “unexplained causes”

Causes of infertility that respond very well to Natural Treatments:

- Autoimmune causes
- Cervical Mucous Disorders
- Egg Quality
- Endometriosis
- Luteal phase defects (low progesterone)
- Male factors (sperm count and quality)
- Metabolic syndrome (insulin resistance)
- PCOS – cystic ovaries
- Stress!!!
- Thyroid Disorders
- **Methylation Defects (which can partly be cause of all of the above)**

The Natural Approach

- Very Extensive and Individualized
- Involves investigating the “unexplained” infertility causes
- High success rate – 75-80% pregnant within 2 years
- Can also enhance the success rate of assisted conception procedures such as IVF
- minimal side effects

How do we investigate?

- Thorough evaluation through interview and physical exam
 - Physical history, emotional history, environmental history, social history, family history
- Laboratory tests – blood, urine, stool, saliva

Initial Testing

1. **Nutrient Panel** – vitamins A, B1, B2, B3, B5, B6, B12, C, D, Beta Carotene, Folic Acid, Magnesium, Selenium, Zinc, Calcium, Coenzyme Q10, Amino Acids, Essential Fatty Acids
2. **Female Hormone Testing** – Blood or salivary (estradiol, progesterone, testosterone, SHBG, estrogen metabolite ratio)
3. **Thyroid Testing**-TSH, FT3, Ft4, RT3
4. **Adrenal Testing**- Salivary cortisol rhythm
5. **Insulin Resistance testing**
6. **CBC, CMP, CRP, food allergy, Candida antibodies/other infections**
7. **Digestive Analysis** – especially if constipated
8. **Consider** – heavy metal testing, other toxicity profiles
9. **MTHFR gene and methylation testing (Homocysteine, histamine , B12, folate)**
10. **Other gene SNP testing** – COMT, CBS, etc.

Methylation

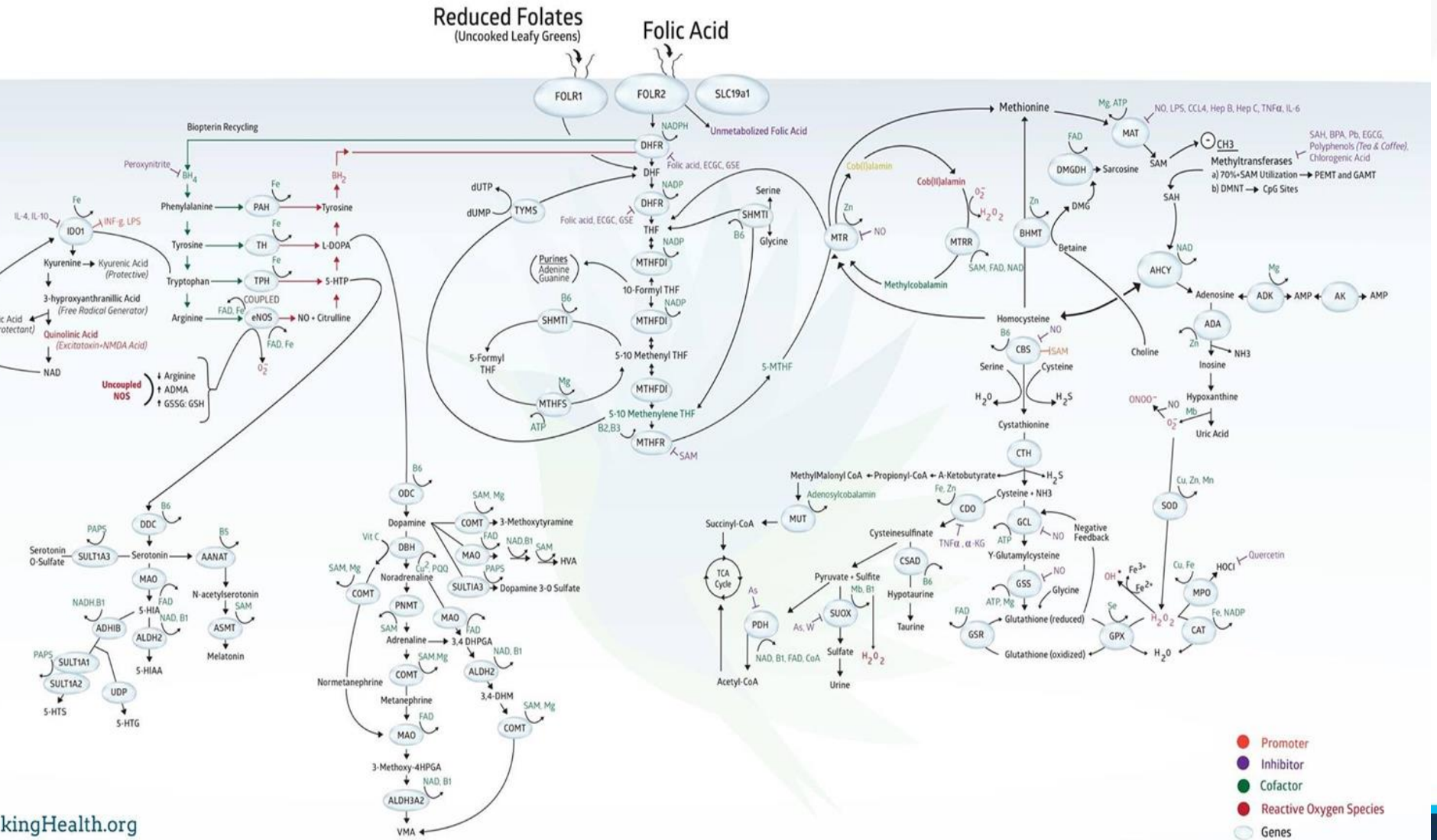
- What is Methylation?
- What is the MTHFR gene?
- What other methylation genes should be assessed for fertility?
- How does methylation problems affect fertility?
- What are signs of methylation defects?
- How do you “treat” methylation problems?

What is Methylation?

- Essential biochemical process in every cell which affects utilization of vitamin B12 and folate – the movement of Carbon atoms
- Regulates **gene expression**...
- Turns genes on and off by adding Methyl (CH₃) groups
- Adding a Methyl group will silence a gene and when removed gene will be expressed

What is Methylation?

- Synthesizes neurotransmitters (dopamine, serotonin, norepinephrine)
- Processes heavy metals, hormones
- Regulates hormone activity and immune system



What are signs of possible methylation defect?

- Cardiovascular disease especially if under the age of 65
- neural tube defects – spina bifida, anencephaly
- cleft palate/lips, tongue ties
- Recurrent miscarriages
- Mental illness – depression, anxiety, bipolar, schizophrenia
- Chemical Sensitivity
- Fibromyalgia
- Autism

Why should I be concerned ?

- Many of us carry defects in Methylation genes that code for the different enzymes
- The level of mutations vary – if homozygous or carrying 2 mutated genes, sometimes good diet and lifestyle aren't enough in our polluted world...supplementation is often absolutely needed!
- Could be decreasing your fertility and/or causing other health concerns
- One gene in particular that has been extensively researched: **MTHFR**

How does Methylation affect fertility?

- Can cause implantation issues by increasing tendency to form blood clots
- Can cause high homocysteine which is associated with poor oocyte maturity and poor early embryo quality
- Can Cause 'Estrogen Dominance' – higher levels of the bad estrogen metabolites – can lead to disorders such as endometriosis, PCOS, fibrocystic breasts, heavy bleeding/clotting, painful periods, menstrual migraines, etc.
- Can cause anovulation

What is MTHFR gene?

- codes for the Methylene tetrahydrofolate reductase enzyme
- Enzyme that activates folic acid (by adding a methyl group) to make 5-MTHF
- The Active folate then breaks down homocysteine to Methionine and in turn makes SAME** (very important methylation molecule esp to help COMT work more efficiently)
- 2 main MTHFR genes:
 - MTHFR C677T
 - MTHFR A1298C
- >

MTHFR:

- 35% of population carries some sort of MTHFR mutation
- Enzyme Mutation is carried through your family tree
- Please note: Not the only enzyme implicated in methylation – but the most studied
- Highly recommended to also access surrounding enzymes and pathways in the methylation cycle ... COMT, CBS, MTR/MTRR

MTHFR:

- Recycles homocysteine to prevent clotting issues
- Helps produce more glutathione to help with 'oxidative stress'
- Helps Produces SAME – major methylator needed for COMT enzyme and breaking down estrogen metabolites

COMT

- Catechol-O-methyltransferase
- Phase 2 conjugation enzyme that processes estrogen metabolites made from phase 1 (cytochrome P450 system)
- Inactivates them into a non carcinogenic metabolite – a “Methoxyestrogen”
- COMT needs that SAME product made from the homocysteine – so even if no COMT mutation can still have problems if not making enough SAME
- Can lead to ‘estrogen dominance’ symptoms and ovulatory failure / early menopause

COMT

- Any chemical exposure that slows COMT can cause high estrogen symptoms
- caffeine ex.

Other enzymes that can affect fertility:

- CYP1B1 and CYP3A4 – phase 1 enzymes
 - Increase tendency to make “bad” or potentially harmful estrogens – 4OHE1 and 16 α OHE1
 - Benzene, phthalates, xenoestrogens, cadmium, PAH’s , etc. accelerate CYP1b1 and makes more 4OHE1
- CBS – production of glutathione
- GSTM1 (glutathione transferase) – if slowed will reduce ability to eliminate harmful free radicals

Did you KNOW?

- The average woman exposes herself to 168 chemicals per day – those are mainly through the use of cosmetics and “body care” products!!
- Many of these accelerate the enzyme that affects estrogen metabolism and creates carcinogens

Genetic factors “load the gun”

....

Environment + Bad diet pulls
the trigger

How to test for methylation defects:

- Genetic profiles – most extensive test is a full genetic profile through www.23andme.com
- Raw data from this company can be assessed and interpreted
- Ethical implications...
- Can also just test for methylation cycles without the additional genetic information – such as our ‘methylation panel’ – checks for homocysteine, B12, B6, Folate, histamine, pyrroles

How are methylation defects “treated”:

- We don't really 'treat' the defect... We support the defect to help our biochemistry run more smoothly
- Optimizing intake of folate, B12, B2, B6 and magnesium- The form of these are particularly important
- You want to intake only the active forms of these nutrients as the inactive forms will not only not be of help but can be detrimental
- Sometimes will also supplement the end products of these defected pathways – ex. SAME, glutathione, Coenzyme Q10, acetylLcarnitine, choline

How to Support MTHFR and methylation defects:

- Avoiding all folic acid supplements and fortified foods – enriched grains, processed foods, etc.
- Make sure any supplementation especially prenatal contains Methylfolate (5-MTHF, 'Metafolin')
- Avoid folic acid blocking drugs – BCPs, methotrexate
- Avoid antacids as they block absorption of B12 and other nutrients
- Eliminate gluten , especially wheat
- Eliminate or reduce dairy
- Minimize caffeine usage, especially if COMT is slow
- Increase dark leafy green vegetables for a natural source of folate
- Minimize exposure to chemicals and toxins in work and home – candles, aerosol sprays, cleaning supplies, highly fragranced body care products, plastics, etc...

Supplements to consider to support methylation:

- **Vitamin B12 in the form of Methylcobalamin** – starting at 1000 mcg and gradually increasing to 5000 mcg daily
 - always supplement with B12 first
 - Sometime hydroxocobalamin and adenosyl are better

After B12 is optimized can start **methylfolate**

- Usually start at 500 mcg and gradually increase

Other supplements to consider: **vitamin B6 in its active form (p5p), trimethylglycine(TMG), phosphatidylcholine, turmeric, vitamin D, probiotics and omega 3 fatty acids**

***Supplementation should be done with the help and supervision of a naturopath or physician who is familiar with working with Methylation pathway as aggravations can occur

Summary - Top Action steps for addressing methylation to help fertility :

1. **Lab testing** – if your health history or family history include conditions related to methylation as stated – genetic testing, B12, Folate, homocysteine, histamine, urine pyrroles
2. **Make sure prenatal vitamins contain the correct type of folate** – stop taking vitamins containing ‘folic acid’ and switch to a brand containing L-methylfolate or L-5-MTHF instead
3. **AVOID AVOID AVOID** – remove toxic load on the body!
4. **Seek the care of a Naturopathic doctor** or physician familiar with methylation so your plan can be specifically tailored to your needs
5. Remember that **this genetic issue is ‘treatable’ with optimal nutrition** and supplementation, and the risks associated with it can be minimized – it is one of the **‘actionable’** genes

Case Study:

- October 2011
- 39 year old female
- 5'9" ; 145 lbs
- CC: depression, fatigue, hormone issues ((breast tenderness, bloating), chronic constipation
- Diet/lifestyle – vegetarian
- PMHX – bulimia – off and on adult life
- FMHX - addictions

Lab results

- Lots of food allergies, esp to the grains
- Very low DHEA – adrenal stress
- Low fatty acids
- Very low Coenzyme Q10 and magnesium

Initial supplementation:

- Fish oil
 - Ubiquinol
 - Magnesium glycinate
 - Zinc
 - Probiotics
-
- After 2 month- bowels were moving daily, cand energy was 50% improved

2 years later 9/2014

- Age 42 - 5'9 , wt 144.6lbs
- In a new marriage and returned with CC of infertility of unknown cause
- Already had done IUI and 4 IVF attempts
- Tried exercising less, cut out ETOH and caffeine, gluten free
- Constipation was back
- Started her on the following:
 - Prenatal with methylfolate
 - ProDHA fish oil
 - EstroDIM (helps decrease bad estrogen metabolites)
- Labs – Mega panel and Reverse T3

Lab results

- Very high reverse T3 – sign of “stress” and body slowing metabolism
- Suboptimal B12
- Low vitamin D3, coenzyme Q10, essential fatty acids
- Low DHEA but higher than 2011
- High triglycerides
- Mild elevation in homocysteine at 9

Initial plan

- Continue diet changes – increase dietary fats and decrease sugar-eliminated soy and switched to unsweetened nut milks
- Prenatal – with methylb12 and methylfolate
- Probiotic – therbiotic – ¼ tsp
- proDHA – 2 a day
- EstroDIM – 1 a day
- Ubiquinol – 100 mg a day
- Magnesium – 325 mg hs
- Began - Naturethroid – ½ grain every morning – due to the high Reverse T3
- DHEA spray – 5 mg to support adrenals

9 months later...

- Re- ran thyroid – much improved - kept her on the ½ grain thyroid
- feeling better energy wise, bowels moving
- less depression / anxiety - No bulimia episodes
- Coenzyme Q10 much higher
- B vitamins at optimal levels
- Homocysteine down a bit
- Still no baby 😞

1 year later...

- Ended up conceiving in November of 2015 - 1 year later
- Gave birth in July 2016 😊

Throwback to 2012:

Lifestyle factors that have been implicated in contributing to decreased fertility

Please note that most all have impact on methylation

Now we have deeper answers to the ‘WHY’ these changes are important other than “because I said so”

Alcohol

- Affects fertility of both men and women
- Can reduce fertility by 50%
- Women who drink <5 glasses of wine per week have higher rates of fertility than those who drink more
- Causes decrease in sperm count, increase in abnormal sperm and decreased motility
- Decreases absorption of KEY fertility nutrients such as zinc and b vitamins

Caffeine

- Decrease fertility, increases miscarriages, lowers birth weights
- May impair estrogen production or estrogen metabolism
- Affects sperm – decrease count and motility
- Raises stress hormones in the body which can affect female hormones and menstrual cycle
- Includes : soda, chocolate, black teas and coffee

Xenoestrogens

- Environmental Estrogens – pesticides, plastics, etc
- Causes hormonal imbalances by disrupting biochemistry
- Best way to eliminate these is to buy only organic produce during the preconceptional period especially the 'dirty dozen'
- Stay away from heating and freezing in plastics, Laundry chemicals, most skin care products with mineral oil and parabens, bug spray

Smoking

- 3x likely to take over 1 year to conceive
- Causes low ovarian reserves
- Genetic damage and chromosomal errors caused by smoking
- Cells within the ovaries are affected by cotinine, a nicotine metabolite – causes developmental problems of the follicles

SLEEP!!!!

- In order to help adrenal reserves you **MUST** get adequate sleep and rest
- No excuses – make this priority

The Hormone Balancing Diet

1. Eat plenty of fruit and vegetables - carotenoids help protect us!
2. Eat complex carbohydrates – whole grains like brown rice, oats
 1. Avoid all ‘enriched grains’ that contain the synthetic forms of folate aka ‘folic acid’ and iron
3. Buy organic foods where possible – especially Dairy (including Butter)
4. Eat phytoestrogens, including beans such as lentils, chickpeas and Soya products – 1 serving Unprocessed soy per day
5. Eat oily foods with the essential oils, including fish, nuts, seeds and oils

- 1.Reduce your intake of saturated fat from dairy products, etc. OR eliminate DAIRY entirely
- 2.Drink enough fluids
- 3.Increase your intake of fiber
- 4.Avoid additives, preservatives and chemicals such as artificial sweeteners
- 5.Reduce your intake of caffeine
- 6.Reduce alcohol
- 7.Avoid sugar on its own and hidden in foods

Supplements

1. Lmethylfolate (active folic acid)
2. Zinc picolinate
3. Selenium
4. Essential Fatty Acids, especially those rich in EPA and DHA
5. Vitamin E – mixed tocopherols
6. Vitamin C
7. L-Arginine
8. Acetyl L-Carnitine (for low sperm motility)
9. Bioflavonoids and phytonutrients – Beta Carotene, lycopene, Lutein, astaxanthin, etc.
10. Ubiquinol (CoQ10)

Supplements to Avoid

- Avoid all Vitamins and prenatal vitamins that contain ‘folic acid’ – you need folate but this form in many women is not metabolized properly and can cause more inflammation and abnormalities
- Assure prenatal has “L-methylfolate” or “ L-5MTHF” or “Metafolin”
- One I usually recommend in PreNatal Multi-Nutrients by Vital Nutrients

Folate

- Prevents *spina bifida*
- Necessary to produce and properly express genetic materials – DNA, RNA
- Big role in detoxification and neurotransmitter production
- Take with all the other B vitamins, esp B12 and B6

Zinc

- Vital nutrient for cell division
- Deficiency can cause chromosomal changes – increased risk of miscarriage and overall reduced fertility
- High concentrations in Sperm
- Zinc supplementation can increase sperm count
- 30 – 50 mg/ day of zinc picolinate is a normal dose

Selenium

- **Antioxidant** – prevents chromosome damage from toxins and other free radicals formed from smoking, barbecuing and deep frying foods.
- Important for proper thyroid function
- Important for optimizing testosterone production in men
- 100-200 mcg per day of Selenomethionine is a normal dose

Essential Fatty Acids (EFAs)

- Affects every system of the body
- Most every American is deficient!
- Especially crucial for men – semen is rich in prostaglandins which are produced from these fats
- **Fatty Fish and Fish oil** supplements are the best source of the Omega 3s EPA and DHA
 - 1000-1500 mg EPA
- Flax Seeds – 2 Tbs per day

Vitamin E

- Antioxidant
- Research has shown that it Increases sperm motility
- Deficiency can promote early menopause in women
- 400-800 IUs per day

Vitamin C

- Antioxidant
- Enhance sperm quality
- Prevents sperm DNA damage which can prevent conception OR cause miscarriage
- 2000+ mg per day

Acetyl L-Carnitine

- Amino Acid
- Increases sperm count and motility
- Helps with the burning of FAT for fuel
- 3000 mg per day
- Acetyl L carnitine is the best form

Antioxidants (Carotenoids, flavonoids)

- Important antioxidants are important and deficiency can be devastating during pregnancy
- The phytochemicals affect gene expression and protect our organs
- Lycopene the red pigment is especially important for the ovaries and breast – even more important in diabetes, PCOS type diseases
- Best source is through food intake!

Other Phytochemicals

- Indole 3 carbinol / DIM – phytochemical found in cruciferous vegetables – affects the breakdown of estrogens in the body – helps promote the “good metabolites”

Vitex (Chaste Tree)

- Stimulates proper function of the pituitary gland that controls the female hormones
- Stimulates release of LH from pituitary
- Modulates secretion of prolactin
- Regulates periods
- Restarts periods which have stopped
- Helps with heavy bleeding
- Increases the ratio of progesterone:estrogen
- Decreases Estrogen dominance

** Only use under supervision of experienced practitioner

Black Cohosh

- Stimulates secretion of LH
- Increases estrogen and progesterone production
- Esp valuable for older women 40+ trying to conceive and those with lower estrogen such as in those underweight or extreme athletes

Rhodiola and Ashwaganda

- Both calming adrenal herbs
 - Enhances thyroid function
 - Adrenal adaptogen – protects the adrenal glands
 - Great for women who are very stressed (what woman isn't?!?!)
- ** stay away from the adrenal stimulation herbs such as ginseng

Other beneficial herbs

- Dong Quai
- MACA
- Blue cohosh
- Crampbark
- False unicorn

Other NATURAL treatment modalities:

- Acupuncture
- Relaxation techniques
 - Biofeedback
 - deep breathing
 - Qi gong
 - Meditation
- Manual soft tissue therapy for pelvic adhesions
 - Pts with history of surgery, infection, inflammation, trauma
- Gluten Avoidance and treatment for Celiac Disease

Main “Take Home”

- There is not 1 cause of ‘infertility’
- The causes are always multifactorial
- You won’t know unless you investigate

The Riordan Clinic can help you achieve your **MIRACLE**, whether you are having fertility problems or not.

The healthier **YOU** are, the healthier your baby will be at birth and throughout his/her life.

12 months of extensive labs and treatment cost less than 1 IVF attempt !!!





Questions?

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