

Reproductive Health: An Integrative Approach

Overview

This overview focuses on how an Integrative Health approach can be useful to support people before, during and after the birth of a child. As with all aspects of our health, reproductive health issues do not exist in isolation; focusing on fertility, prenatal care, post-pregnancy concerns, and other such issues must occur in conjunction with a focus on each person as a whole. What really matters to them, and what gives them meaning, aspiration, or purpose? Integrative Health emphasizes mindful awareness and general self-care along with conventional and integrative approaches to health and well-being. The Circle of Health highlights eight areas of self-care: Surroundings; Personal Development; Nutrition; Recharge; Family, Friends, and Co-workers; Spirit and Soul; Mind and Emotions; and Physical Activity. The patient narratives below, focused on a couple wanting to start a family, provides an example of how Integrative Health might inform this important area. Research has also shown success with certain complementary approaches, ranging from using mind-body tools or acupuncture to taking dietary supplements or exploring body-based therapies.

Meet the Patients

Juan and Alli are 28- and 23-years-old respectively, and they present to discuss their plans to start a family. They are both patients in the same clinic and see the same family doctor. Juan works in the construction industry. He did has smoked since college and has an old sports injury to his leg, for which he has been through a course of Physical Therapy. He has no other substance abuse issues and has good mental health. He is otherwise healthy and reports that, to his knowledge, he has never impregnated anyone before.

Alli met Juan in college. She is middle school teacher. She is in good general health. She has never been pregnant before. Her periods are regular and come every 30 days. She had been on combination oral contraceptives for the past five years but just stopped them 6 months ago. They have been having intercourse every 1-3 days when Alli is not menstruating and are a little frustrated that they have not conceived yet. Alli has not noticed any ovulation-related pains or any egg-white discharge mid-cycle, but she has not really been paying attention to that. Her periods have been a little heavier since stopping the oral contraceptives but still seem to be what she remembered having prior to being on birth control. There has been no excessive cramping or bleeding. She heard she cannot drink alcohol in pregnancy, so she stopped drinking 1-2 drinks a week several months ago. She has not started a prenatal vitamin because she is a bit confused about which one to purchase. She is up-to-date with her preventative health care and vaccines.

The couple is eager to conceive and would like to talk about how they can prepare. They have many questions about diet and lifestyle. Alli states that it took her sister over a year to conceive, and they are really hoping they do not have to wait that long, after already having delayed

starting a family due to work obligations and a recent relocation. Alli's sister has also gone through two miscarriages, the causes of which were not specifically identified. Alli also states that both her mom and her sister had unmedicated, vaginal births, and she and Juan are hoping for the same. They would like information about resources and guidance with finding a good fit for obstetrical care.

Personal Health Inventory

On her Personal Health Inventory (PHI), Alli rates herself a 4 out of 5 for her overall physical well-being and a 4 for overall mental and emotional well-being. When asked what matters most to her and why she wants to be healthy, Alli responds:

"Friends, family, our marriage, and my faith are all important to me. I'd like to be able to help kids even more in my role as a teacher and bring more good into the world through my community of faith."

For the eight areas of self-care, Alli rates herself on where she is, and where she would like to be. She decides to first focus on [Nutrition](#) by making changes to her diet. She also states that she wants additional information from her health care provider about vitamins and supplements.

More information is available in [Alli's PHI](#).

On his PHI, Juan rates himself a 3 out of 5 for his overall physical well-being and a 3 for overall mental and emotional well-being. When asked what matters most to him and why he wants to be healthy, Juan responds:

"Friends, family, my marriage, and my faith are what matter most to me. I want to be an amazing father and a good provider."

For the eight areas of self-care, Juan rates himself on where he is, and where he would like to be. Juan decides to first focus on the areas of [Nutrition](#) and [Family, Friends, and Co-workers](#) by cooking more healthy meals at home and traveling to visit family in New York once a year.

More information is available in [Juan's PHI](#).

Intro to Improving Fertility

Preconception and pregnancy are pivotal times in the lives of women and their partners. It takes a great deal of strength and faith to conceive, carry, birth, and raise a child. No other series of events are so life changing. Many factors contribute to male and female fertility, including age, stress levels, lifestyle, comorbidities, genetics, number and shape of sperm, and the general health of the genital tract.

Overall 10%-15% of couples have trouble achieving pregnancy and subsequent successful delivery. Infertility results from female infertility factors about one-third of the time and male infertility factors about one-third of the time. In the remaining third, the cause is either unknown or a combination of male and female factors.

Male fertility begins to decline in the early 30s, but most men have the ability to conceive throughout their lives. It may take older men longer than men in their 20s to conceive. A woman's fertility peaks in the early and mid-20s, after which it starts to decline, with this decline accelerating after age 35. Even among the youngest couples, the probability of pregnancy in any one month ranges from 20% to 60%.¹

About 80% of couples will conceive in the first year of regular unprotected intercourse, if the woman is under age 40.² An infertility evaluation is usually initiated after one year of regular unprotected intercourse in women under age 35, and after six months of unprotected intercourse in women age 35 years and older.³ However, the evaluation may be initiated sooner in women with a history of miscarriages, irregular menstrual cycles, or known risk factors for infertility, such as endometriosis, a history of pelvic inflammatory disease, polycystic ovarian syndrome, or reproductive tract malformations. Infertility affects up to 15% of couples.³ Some women who are eager to conceive may request testing prior to an official diagnosis of infertility. It is reasonable to evaluate a woman's thyroid function, progesterone level, prolactin level, and ovarian reserve. Men may request semen analysis prior to an infertility diagnosis as well.

During preconception care, the clinician has the opportunity to work with a couple to achieve healthy body weights, screen and treat for infectious diseases, update appropriate immunizations, and review medications for teratogenic effects. Women who want to become pregnant should take folic acid supplements to reduce the risk of neural tube defects. Discuss the evidence behind other dietary supplements, such as vitamin D, omega-3 fats, and probiotics as well. Counsel couples on strategies for conception, as well as diet and lifestyle changes that can lead to optimal pregnancy health.

Initial work up for infertility includes testing thyroid function, progesterone level, prolactin level, luteinizing hormone, and follicle stimulating hormone in women, and a semen analysis in men.

Self-Care

Physical Activity

A healthy amount of exercise in men can be beneficial for fertility.⁴ In men, being overweight or obese is associated with poor sperm quality, infertility, and increased miscarriage risk.⁵ It appears that moderate exercise is more helpful than rigorous exercise. Physically active men who exercised at least three times a week for one hour typically scored higher in almost all sperm parameters in comparison with men who participated in more rigorous exercise.⁶ Bicycling more than 5 hours per week has been demonstrated to have a negative correlation with sperm parameters and is not the exercise of choice for men looking to conceive.⁷

For women who are obese or overweight, exercise coupled with weight loss has been shown to improve fertility.^{8,9} However, excessive exercise in women can lead to hypothalamic dysfunction, leading to irregular menses and decreased ovulation.¹⁰ Women with a normal body mass index (BMI) who are trying to conceive should stay active as part of maintaining good overall health, but they should limit intense cardiovascular exercise to less than 4 hours per week.

Nutrition

Couples trying to conceive should focus on a diet rich in seafood, poultry, whole grains, fruits, and vegetables, as this diet supports better fertility in women and better semen quality in men.¹¹ To aid in achieving this, encourage couples to cook at home as much as possible and avoid processed, prepackaged foods. There are certain vitamins and food groups that may have a greater impact on fertility than others.

For men, intake of omega-3 fats from fish and nuts positively affect fertility.¹² Omega-6 fatty acid (poultry, eggs, nuts, whole grains) intake is also associated with improved sperm quality.¹² The intake of vegetable proteins, in the form of beans and nuts, is beneficial.¹² Men should consuming isolated soy isoflavones, however whole soy foods in moderation, such as tofu, tempeh, and edamame are ok.¹² A diet high in antioxidants from fruits and vegetables also has beneficial effects.

For women, reducing intake of trans-fatty acids (mainly found in processed foods) and increasing intake of monounsaturated fats (avocado, nuts, olive oil) improves ovulation.¹² High-carbohydrate diets and foods with higher glycemic index have a negative effect on ovulation, and should be avoided.¹² Vegetable protein sources have a positive effect, but it should be noted that high-protein diets can negatively impact ovulation.¹² Lower antioxidant status is associated with infertility, hence women should eat a diet rich in fruits and vegetables.¹²

Those wishing to conceive should avoid a low-carbohydrate, high-fat diet from meat (Atkins Diet) or a ketogenic diet. Fats associated with improved fertility include monounsaturated fats from avocados, nuts, and olive oil.

Some chemicals affect reproductive hormones. Counsel couples to avoid exposure to chemicals such as those found in paints, pesticides, industrial chemicals, pollution, and plastics. Food should never be cooked or heated in plastic, as this increases exposure to the toxic chemical bisphenol A.¹³ Food should be stored and heated in glass, and produce should be organic whenever possible. Direct families to the [Environmental Working Group](#) website for its annual Dirty Dozen™ and Clean 15™ lists, which guide consumers in choosing wisely between conventional and organic produce. For more information, see the "[Food Safety](#)" Integrative Health tool.

For men, sperm counts may benefit from an increased intake of antioxidants.¹² In addition to eating a diet high in antioxidants, men trying to conceive may want to consider taking a multivitamin containing vitamin A, vitamin E, folic acid, and zinc; this may increase sperm concentration. Men may also consider taking an omega-3 supplement, if their intake of fish is low.

Mind and Emotions

Men who have experienced more than two stressful life events have been shown to have decreased sperm concentration, motility, and morphology.¹⁴ Stresses from work, life events, and social interactions can all have a negative impact on sperm quality.¹⁵ Depression has also been associated with low testosterone levels and poorer sperm parameters, although it is unknown which is cause and which is effect.¹⁶ Decreasing stress levels and improving mental health has been shown to improve fertility parameters.¹⁷

Stress has also been implicated in female infertility. Women who work more than 32 hours a week have been shown to take longer to conceive.¹⁸ Furthermore, positive mood increases the likelihood of delivering a live baby, while high anxiety levels increase the chances of stillbirth.¹⁹ Fertilization of oocytes also decreases when stress increases.²⁰ The cause of this may lie in the associated increase in stress hormone levels. Women who participate in counseling or mind-body therapies may reduce their anxiety and depression and improve their chances of fertility.¹⁷ Mindfulness meditation and yoga are two other methods of stress reduction that women may find beneficial.^{21,22}

Reducing perception of stress is associated with more successful pregnancy outcomes.

Complementary Approaches Supplements & Herbs

Note: Supplements are not regulated with the same degree of oversight as medications, and it is important that clinicians keep this in mind. Products vary greatly in terms of accuracy of labeling, presence of adulterants, and the legitimacy of claims made by the manufacturer.

General Guidelines for Women

For women, supplementation in the preconception period should include a good prenatal vitamin, with at least 800-1,000 mcg of folic acid and a minimum of 150 mcg of iodine for prevention of birth defects. Women should look for a prenatal vitamin that adheres to good manufacturing practices (GMP) and one that does not contain more than 2,000-3,000 International Units (IUs) of vitamin A acetate/palmitate. High dietary intake of preformed vitamin A appears teratogenic.²³ Also, in many areas of the country, women are very deficient in vitamin D. Hypovitaminosis D is associated with several poor pregnancy outcomes. Screen for vitamin D deficiency and correct it in the preconception period.²⁴⁻²⁶ It is important not to overcorrect vitamin D, as elevated levels can have a detrimental effect.

Omega-3 deficiency is rampant in pregnant women in the United States.²⁷ Research suggests that omega-3 fats may be associated with improved fertility and improved egg quality.¹¹ Omega-3 fats are also the main fats for brain and eye development in the fetus. There are some studies to suggest an increased intake of omega-3 fats may improve pregnancy outcomes and child development, although data is mixed.²⁸ Women who eat fatty fish less than three times per week should also consider supplementing with fish oil in the preconception period. The recommended dose is 1,000 mg of DHA and EPA in liquid or capsule form.

The use of a daily probiotic supplement in women trying to conceive may improve fertility as well as pregnancy outcomes.²⁹ Women should look for a good-quality product that contains species such as *Lactobacillus rhamnosus*, *Bifidobacterium lactis*, and *Lactobacillus rhamnosus* GG (3×10^9 colony-forming units [CFU]/day). You can help your patients by becoming familiar with reputable brands sold in your area. The [ConsumerLab](#) website is an excellent resource.

Supplements for Male Fertility

There are many herbs and supplements on the market for male fertility. [The National Center for Complementary and Integrative Health](#) website contains free information to help physicians and consumers choose safe products. Claims by manufacturers far outpace available research findings. The following are a few common examples:

- **Long Jack (*Eurycoma longifolia*)**, also known as Malaysian ginseng, is a tall, skinny tree. The roots and bark are the parts used. Studies have shown an increase in libido, improved fertility, and improved erectile dysfunction for males taking this supplement.³⁰ No adverse effects were reported.
- **L-carnitine** is an amino acid that has been shown to be a vital component in sperm motility. This supplement is considered safe with little risk of side effects. The dose is 2 gm of L-carnitine, taken orally, plus 1 gm of acetyl-L-carnitine daily. Use used under the supervision of a physician.¹
- **Coenzyme Q10** is a vitamin-like compound found in all cells of the body. One study showed that when taken orally, sperm motility and sperm count improved.³¹ Two human studies have also confirmed this.³² The dose is 200 mg, taken orally, once daily. There have been no reports of significant side effects.
- **Saffron (*Crocus sativus*)** was shown in one study to improve sperm morphology and motility but not sperm count.³³ The dose is 50 mg, taken orally, 3 times a week.
- **Cowhage (*Mucuna pruriens*)** is a legume found in tropical regions. One study of infertile men showed it brought fertility hormone levels closer to normal.³⁴ Dosages range from 22.5-67.5 gm divided into 2-5 doses per day. Because of the risk of cardiac or neurologic side effects, use this supplement only under the supervision of a physician.
- **Omega-3 fatty acids** improve sperm quality.³⁵ It is recommended that men trying to conceive take 1,000 mg of DHA and EPA daily in the form of fish oil liquid or capsules.
- **Selenium** has been shown to improve sperm motility.¹²
- **Ashwaganda (*Withania somnifera*)** is safe and improves sperm motility.³⁶ The studied dose is 675 mg of ashwaganda root by mouth daily.

Acupuncture

Chinese medicine (CM) has an ancient tradition of use in improving fertility. A CM practitioner may recommend both Chinese herbs and acupuncture. Acupuncture has been shown to improve endometrial thickness, reduce stress, and improve patient satisfaction during fertility treatment.³⁷ Evidence that acupuncture improves live birth rates is inconclusive.³⁸ There is some research to suggest that men undergoing acupuncture may have improved sperm parameters.³⁹

Men and women may benefit from acupuncture during fertility treatment.

Tobacco Use

It is well-known that cigarette smoke contains over 4,000 chemicals, some of which may impact human fertility.⁴⁰ Approximately 21% of women of reproductive age and 22% of men of

reproductive age in the United States smoke cigarettes.^{41,42} Men who smoke before or during attempts to conceive decrease their fertility when compared to nonsmokers.⁴³ Smoking reduces total sperm count, density, motility, normal morphology, semen volume, and fertilizing capacity.⁴³ For women, smoking is also associated with infertility due to decreased ovarian reserve and hormonal disruption.⁴¹

Personal Health Plan

Through the process of completing the Personal Health Inventory (PHI), Alli and Juan identified some areas that they would like to work on. Alli realized that her anxiety around conceiving was affecting her daily stress levels and her relationship with Juan. Juan identified that he would like to resume regular exercise and quit smoking. Juan's counselor referred them to a marital counselor, and they have begun to talk about their anxieties around conceiving and becoming parents. Juan made an appointment with his old physical therapist to talk about ways to get back into exercise, given the limitations of his leg injury. Juan has also enrolled in a smoking cessation program and has stopped smoking inside the apartment.

Alli has begun a high-quality prenatal vitamin, fish oil, probiotics, and a vitamin D supplement. She has stopped drinking diet soda. She picked up a copy of the book, *Taking Charge of Your Fertility*,⁴⁴ and has started charting her cycles. Diet improvement, social connection, and sleep regulation are areas they still feel they need to work on. She is considering acupuncture to help with stress.

Name: Juan and Alli

Date: xx/xx/xxxx

Meaning, Aspiration, Purpose (MAP):

Our mission is to create a healthy family.

My Goals:

- Increase home-cooked meals and decrease eating out.
- Work to develop a regular evening routine together that promotes healthy sleep.
- Identify ways to exercise together for at least 30 minutes, 4 times a week.
- Reduce the stress around fertility and conception.
- Eliminate tobacco exposure.
- Explore opportunities for social connection.

Mindful Awareness:

Stress Management

Juan, continue to work with a psychologist.

- Juan and Alli, continue to discuss the stress around fertility and the transition to parenthood with a couple's counselor.

Areas of Self-Care:

- Physical Activity
 - Explore forms of exercise we enjoy together, such as walking after dinner. Explore obtaining a membership at a local gym or YMCA. Consider doing at least one recreational activity every weekend together that involves movement.
- Nutrition
 - Limit eating out to Friday nights only. On the weekends, consider making two large main courses, such as soups or casseroles that will result in leftovers to take to work throughout the week. Stop buying processed, high-carbohydrate and high-glycemic index foods. Purchase an assortment of fresh fruit for snacks during the week. Purchase vegetables, pre-cut them, and store in the refrigerator for creating salads on the run. Review principles of the anti-inflammatory diet or Mediterranean diet to guide meals at home. Eliminate sodas and stick to mainly water for hydration. Keep caffeine intake under 100 mg daily. Cook with olive oil. Look into cooking classes in the community.
- Recharge
 - Create an evening routine together that includes going to bed by at least 11 p.m. Regular sleep routines and adequate hours of sleep will help improve mood and energy levels.
- Family, Friends, and Co-Workers/Personal Development
 - Explore ways to connect with others in the community. Participate in events sponsored by local community organizations or through church. Looking at the given list of recommended midwives and physicians in the community who practice obstetrics, set up "meet and greet" visits and explore who we might want work with during the pregnancy.

Professional Care: Conventional and Complementary

- Prevention/Screening
 - Up-to-date on vaccinations
 - Juan will obtain screening for sexually transmitted infections, including HIV testing, and testing for cystic fibrosis carrier status.
 - Alli will see her family physician in the community to update her pap test and preventative health care
- Treatment (e.g., conventional and complementary approaches, medications, and supplements)
 - Juan
 - Continue on antidepressant.
 - Explore nicotine replacement options through the smoking cessation program.
 - Start a daily antioxidant supplement and consider trying Coenzyme q10.
 - Alli's supplements
 - Prenatal vitamins
 - Fish oil

- Probiotics
- Vitamin D

- Skill building and education
 - Nutrition
 - Sleep
 - Stress management/anxiety reduction
 - Physical fitness

Referrals/Consults

- Psychology
- Acupuncture
- Community midwives and physicians practicing obstetrics
- Juan: Physical Therapy, smoking cessation

Community

Resources

- ***Taking Charge of Your Fertility***, by Toni Weschler, MPH (2015)
 - A practical guide to charting your cycles, predicting fertility patterns, and timing intercourse

My Support Team

- Primary Care Team
- Marriage counselor
- Smoking cessation program
- Acupuncture
- For Juan: PT and smoking cessation team
- Community midwives and physicians practicing obstetrics
- Friends and family
- Church Community

Follow-Up

Six months later, Juan and Alli return to the clinic. Alli has been charting her cycles, and she and Juan have achieved pregnancy. She is about 8 weeks pregnant, per her last menstrual cycle. She and Juan have worked hard on following their health plans. Juan has successfully quit smoking. They have reduced eating out to only Fridays, most weeks. They have been pretty good about taking their supplements and have continued to work with their counselors. They still identify increasing exercise and social connection as on-going areas of effort.

They are excited to move into this next phase of growing their family. They have many questions today about preparing for natural childbirth and finding resources that might help them achieve this goal. Juan is wondering about recommendations for Alli's diet and exercise during pregnancy, and expresses concerns regarding environmental exposures. Alli states her sister had a lot of back pain and sciatica in pregnancy. She wonders what she can do to keep her body feeling good through this process.

Personal Health Inventory

Alli and Juan complete another PHI. Alli rates herself a 3 out of 5 for her overall physical well-being and a 3 for overall mental and emotional well-being. When asked what matters most to her and why she wants to be healthy, Alli responds:

“A healthy pregnancy, healthy birth, and positive transition into parenthood.”

For the eight areas of self-care, Alli once again rates herself on where she is, and where she would like to be. Alli decides to first focus on the areas of Nutrition and Personal Development by increasing her intake of fruits and vegetables and volunteering more at church.

Juan once again rates himself a 3 out of 5 for his overall physical well-being and a 4 for overall mental and emotional well-being. When asked what matters most to him and why he wants to be healthy, Juan responds:

“Things that matter in my life: a healthy pregnancy, healthy birth, and positive transition into parenthood.”

In terms of the eight areas of self-care, Juan decides to first focus on the areas of Physical Activity and Recharge by dedicating more time for exercise, sticking to bedtimes, and not staying up late on weekends.

Intro to Prenatal Health

Routine prenatal care involves office visits and lab work at regular intervals, with the goal of optimizing health and identifying disease. Choices for prenatal care providers include midwives, obstetricians, and family physicians. Each individual care clinician may offer a unique set of skills and practice styles. Encourage pregnant couples to seek out a clinician who aligns with their personal goals and specific health needs for their pregnancy. For example, women with certain high-risk health complications, such as diabetes or hypertension, may not be eligible for care with a midwife, since midwives typically only care for healthy, low-risk women. Family physicians vary in their scope of practice depending on their particular training and practice location.

Encourage all pregnant families, and especially those expecting their first baby, to educate themselves either in a class format or through reading. Discuss with families the presence of vast amounts of misinformation related to pregnancy and birth, especially on the Internet. Have a list available of local birthing and breastfeeding classes, as well as a list of recommended reading. Encourage families to make a plan for their baby's birth and consider hiring a doula. Education regarding breastfeeding is essential in the third trimester of pregnancy. This also is a time for families to plan ahead for maternity and paternity leave and to receive education about basic newborn care and what to expect life to be like with a new baby.

Self-Care

Physical Activity

Current American College of Obstetricians and Gynecologists recommendations advise that pregnant women who are free of medical or obstetric concerns participate in a regular exercise program. These guidelines recommend that pregnant women engage in 30 minutes of moderate physical activity on most days of the week.⁴⁵ Moderate physical activity is defined as an activity performed at an intensity of 55%-70% of max heart rate), which corresponds to brisk walking, household chores, swimming, or low-impact aerobics.⁴⁶ It is good for previously sedentary women to start with 15 minutes of continuous exercise 3 times a week, increasing gradually to 30-minute sessions 4 or more times a week.⁴⁷ The aim of exercising during pregnancy is to maintain good cardiovascular health without trying to necessarily achieve peak fitness.⁴⁷

The goal of exercise during pregnancy is to maintain good cardiovascular health without necessarily achieving peak fitness.

Research has shown no adverse maternal or fetal complications from regular moderate physical activity during pregnancy.⁴⁶ In fact, maternal benefits include improved cardiovascular function, less pregnancy weight gain, decreased musculoskeletal discomfort, reduced incidence of muscle cramps and lower limb edema, improved mood stability, and a decrease in the incidence of gestational diabetes and gestational hypertension.⁴⁵ Fetal benefits include decreased fat accumulation and an improved tolerance to stress.⁴⁸ Due to the presence of high levels of estrogen and relaxin hormones in pregnancy, pregnant women have more ligamentous laxity and hypermobility, which can make them more prone to injury. Counsel pregnant women to avoid contact sports and instead focus on activities such as walking, swimming, stationary cycling, and prenatal yoga. Many women find prenatal yoga especially beneficial and enjoy the social aspect of taking the class along with other pregnant women.⁴⁹

Nutrition

The maternal diet should focus on whole, unprocessed foods that are organic, whenever possible. Recommended weight gain is based on a woman's pre-pregnancy BMI, and overweight or obese women are recommended to gain less weight.⁵⁰ Calorie intake should not begin to increase until the second trimester of pregnancy. Protein intake should increase during pregnancy to about 80-100 gm per day.⁵¹ Carbohydrates should be those that are lower in glycemic index, to reduce the risk of fetal macrosomia and reduce the risk of maternal gestational diabetes.⁵² For more information, use the "[Managing Carbohydrates for Better Health](#)" Integrative Health tool.

Encourage women to meet their recommended daily calcium intake of 1,000 mg a day through diet or supplementation. Folic acid and vitamin D are also important nutrients in pregnancy, which many women ensure they get through supplementation. Counsel women to avoid alcohol and limit caffeine to 200-300 mg per day.^{53,54} Black and green teas are considered safe in pregnancy, but herbal teas should be used with caution. Many women may benefit from keeping a dietary journal for a week and meeting with a practitioner trained in nutrition to get specific recommendations for improvement. Counsel women to avoid fish with high mercury levels (fish high on the food chain such as tuna and swordfish) and to prevent foodborne illness

by avoiding raw meat, raw eggs, and unpasteurized dairy. For more information about eating fish in pregnancy, see [“FDA Fish Guidance.”](#)

Mind and Emotions

There is evidence that pregnant women gain health benefits from mind-body therapies such as yoga, meditation, or progressive muscle relaxation.⁵⁵ Treatment group outcomes have included higher birth weight, shorter length of labor, fewer instrument-assisted births, and reduced perceived stress and anxiety.⁵⁵ Yoga in particular has been shown to reduce depression, anxiety, low back pain, and sleep disturbances.⁵⁶ Relaxation during pregnancy has also been associated with improved regulation of emotional states and physiology, which has been shown to result in positive effects on both fetal behavior and obstetric and neonatal outcomes.⁵⁷ Mindfulness training during pregnancy has been shown to reduce anxiety, depression, and perceived stress.⁵⁸ Mindfulness-based childbirth education also has been shown to improve maternal psychosocial outcomes.⁵⁹ Identifying pregnant women at risk and instituting treatment early in pregnancy could improve obstetric and developmental outcomes for both the mother and her fetus in conjunction with conventional prenatal care.

Training in self-hypnosis prenatally is a popular technique for coping with labor pain. One study has shown a significant reduction in pain for women who practice this technique, although other study results have been mixed.^{60,61} It also seems to reduce the need for narcotic pain medication with no adverse effects.⁶²

Spirit and Soul

Pregnancy is a great time for couples to explore together that which gives their lives a greater sense of meaning. In what type of spiritual tradition, if any, do they want raise their children? In what way do they see their spirituality influencing how they parent? Helpful tools may include journaling, reading, and connecting with religious or spiritual leaders or communities. Pregnancy can also be a time of great stress for couples, as they learn to adapt to huge changes in lifestyle and the challenges of parenting. Mind-body techniques, such as breathwork, mindfulness, and yoga can be helpful in reducing stress levels.

Surroundings

Environmental exposures are of concern to many pregnant women, but several can be modified by lifestyle choices. Second-hand tobacco smoke is a risk factor for preterm delivery, and potentially for low birth weight.⁶³ Suggestive evidence associates pesticides and polychlorinated biphenyls with decreased fetal growth and length of gestation.^{64,65} Stronger evidence also links certain birth defects with exposure to organic solvents and chlorophenoxy herbicides.⁶⁴ Also, evidence suggests dichlorodiphenyltrichloroethane (DDT) and bisphenol A (BPA) could be associated with pregnancy loss and other adverse pregnancy and pediatric outcomes.^{64,66,67} Pregnant women should reduce their exposures whenever possible by making simple choices such as not using pesticides or herbicides in their homes and yards. Recommend storing food in glass whenever possible and avoiding cans with BPA linings. Organic foods are safest when affordable. Carefully screen body products. Lastly, women can prevent toxoplasmosis exposure by avoiding direct contact with cat litter. The [Environmental Working Group](#) is a great resource for information on reducing toxic exposures in pregnancy.

Complementary Approaches

Supplements & Herbs

Note: Supplements are not regulated with the same degree of oversight as medications, and it is important that clinicians keep this in mind. Products vary greatly in terms of accuracy of labeling, presence of adulterants, and the legitimacy of claims made by the manufacturer.

Folic acid/Prenatal Vitamin

When taken before pregnancy and continued during pregnancy, folic acid reduces the risk of neural tube defects in babies, as well as the risk of megaloblastic anemia in women who have insufficient dietary intake.⁶⁸ There may also be some benefit in the reduction of small-for-gestational-age birth and preeclampsia for women who take folic acid.^{69,70} Folic acid in pregnancy also appears to have positive effects on neurodevelopment of children, including a role in reduction of autism.⁷¹ The dose for folate, whether taken separately or within a multivitamin, is 800-1,000 mcg daily.

Omega-3

Supplementation with omega-3 fatty acids in pregnancy leads to a decreased risk of early preterm delivery and a modest increase in birth weight.^{28,72} Supplementation may also increase the IQ of the infant, psychomotor, and vision development, although data is mixed.⁷³ Women can look for a molecularly distilled supplement that, contains 1,000 mg of omega-3 fats, and both DHA and EPA.

Vitamin D

Women with an insufficient vitamin D status, 25-hydroxyvitamin D [25(OH)D] level less than 50 nmol/L, have an increased risk of preeclampsia, gestational diabetes, preterm birth and having a small-for-gestational-age infant.⁷⁴⁻⁷⁷ Vitamin D levels vary depending on geographic location, skin tone of the mother, and amount of sun exposure. Pregnant women should have their 25 OH vitamin D level checked in early pregnancy to assess the need for supplementation.

Probiotics

The administration of lactobacilli during pregnancy has been shown in several studies to decrease the risk of atopic dermatitis in children ages 2-7 years and to reduce the risk of atopic sensitization.^{29,78,79} A daily probiotic taken in pregnancy has been shown to reduce the risk of developing gestational diabetes and preeclampsia.⁸⁰ Probiotics may also reduce the risk of preterm labor, but more research is needed.⁸¹ No adverse effects found. Women should look for a good-quality product that contains species such as *Lactobacillus rhamnosus* GG or *Bifidobacterium lactis* at a dose of 3 x 10⁹ CFU per day.

Red Raspberry Leaf (*Rubus idaeus*, *R. occidentalis*)

This herb has been used as a uterine tonic and general pregnancy tea for at least two centuries. Often mistakenly recommended to induce labor, its actual role is to increase blood flow to the uterus and aid the uterine muscle fibers in more organized contraction. It most commonly is consumed as a tea, taken as 1-3 cups daily. Many studies have documented safety, including one randomized controlled trial of 192 women that showed no adverse effects to mother or baby, shorter second stage of labor (mean difference of 10 minutes), and a lower rate of forceps

use.⁸² One retrospective, observational study of over 150 women also found that it reduced the risk of postdates pregnancy, but more conclusive data is needed.⁸³

Acupuncture

A systematic review showed acupuncture therapy may offer some advantage over conventional treatment in the management of hyperemesis gravidarum, pelvic and low back pain in pregnancy, breech presentation, and pain in labor.^{84,85} Encourage patients to look into insurance coverage for acupuncture use in pregnancy and labor, as coverage is available under some plans. Some research also suggests acupuncture may be useful for labor induction and has no known risks.⁸⁶

Prenatal Massage

Antenatal digital perineal massage in the third trimester reduces the likelihood of perineal trauma (mainly episiotomies) and postpartum perineal pain.⁸⁷ Advise women of the likely benefit of perineal massage and provide information on how to massage. Certain yoga poses may also help with perineal stretching as well. Whole body massage in pregnancy may reduce stress, and may play a role in reducing pain, shorten labor, and improve women's emotional experience of labor.⁸⁸ Massage may also help pelvic and low back pain during pregnancy.⁸⁹

Chiropractic and Osteopathic Care

Chiropractic is an effective option to safely reduce back pain in pregnancy.⁹⁰ Many women also use chiropractic to prepare the body for labor and birth. More research is needed in these areas. Osteopathic manipulation is effective at treating pelvic and low back pain in pregnancy.⁹¹

Prenatal Personal Health Plan

Through the process of completing an updated PHI, Juan and Alli identified areas they want to learn more about, and they have picked out several books on pregnancy, childbirth, and breastfeeding from the library. They have started reading and have made an intake appointment with a midwifery group who practices out of the local birthing hospital. They have stepped up their exercise and have been regularly walking 4-5 nights a week. Juan has remained committed to abstinence from tobacco, although it still requires a lot of effort and encouragement from those around him.

Name: Juan and Alli

Meaning, Aspiration, Purpose (MAP):

Our mission is to create a healthy family and make the pregnancy go as smoothly as possible.

Our Goals:

- Increase fruits and vegetables in home-cooked meals.
- Continue smart supplementation of diet.
- Continue brisk walking for at least 30 minutes, 4 times a week.

- Continue counseling to maintain good mental health during pregnancy and during transition to parenthood.
- Eliminate toxic environment exposures whenever possible, and continue to avoid tobacco exposure.
- Explore opportunities for social connection with other young parents in the community.
- Utilize massage, acupuncture, and chiropractic as needed to keep feeling healthy in pregnancy.
- Complete genetic testing/counseling if desired.

Mindful Awareness:

Begin with experiencing a mindful awareness practice at home using the mindfulness CD given at the clinic visit. Consider joining a Mindfulness-Based Stress Reduction group. Find a local instructor by going to this [website](#).

Areas of Self-Care:

- Physical Activity
 - Continue to encourage each other to keep up 30 minutes of brisk walking in the evening, at least 4 nights a week. Alli, consider signing up for prenatal yoga or an aquatics class, along with massage, chiropractic, and/or acupuncture to keep the body feeling well during pregnancy and to manage stress.
- Nutrition
 - Try to add at least one additional serving of fruit each day and make sure that there are at least two different vegetable options at lunch and dinner. Alli, increase protein intake to 80 gm a day and calcium intake to 1,000 mg daily. Keep a food journal for a week and meet with a nutritionist who specializes in pregnancy.
- Family, Friends, and Co-Workers/Personal Development
 - Explore the list of local childbirth and breastfeeding classes and enroll in one Interview potential doulas for labor support. Look into new parent groups offered by the church community or the local hospital.
- Spirit and Soul
 - Explore, with a pastor, recommended faith-based readings on parenting and family life.

Professional Care: Conventional and Complementary

- Prevention/Screening
 - Routine prenatal care
- Treatment (e.g., conventional and complementary approaches, medications, and supplements)
 - Alli
 - Treatment: Chiropractic care, acupuncture, massage
 - Medications: Prenatal vitamins, fish oil, probiotics, vitamin D, coenzyme Q10, raspberry leaf tea

- Juan
 - Treatment: Smoking cessation program to remain tobacco-free
 - Medications: Continue on the antidepressant
- Replace any plastic food storage items with glass. Replace any concerning body products with safer options and eliminate the use of any pesticides or herbicides at home.
- Skill building and education
 - Nutrition
 - Pregnancy
 - Childbirth
 - Parenting
 - Walking
 - All: prenatal yoga and aquatics

Referrals/Consults

- Childbirth classes

Resources

- [Environmental Working Group](#): tips on avoiding toxic exposures in pregnancy and shopping for organic produce
- *The Natural Pregnancy Book: Herbs, Nutrition, and Other Holistic Choices*, by Aviva Jill Romm, MD (2014)
- [“Advice about Eating Fish: What Pregnant Women and Parents Should Know”](#): advice from the FDA and EPA, U.S. Food and Drug Administration
- [The National Center for Complementary and Alternative Medicine](#): contains free information to help in choosing safe dietary supplements
- [Hypnobirthing International](#): hypnobirthing childbirth technique
- [DONA International](#): to find a local doula

Our Support Team

- Primary care practitioner
- Midwifery team
- Counselor for Juan
- Marital counselor
- Church community
- Family

Integrative Health Tools

- [Books Your Patients May Be Reading about Different Perspectives on Childbirth](#)
- [Breastfeeding Tips and Resources: Getting Families Off to the Right Start and Keeping Them on Course](#)
- [Common Complaints in Pregnancy](#)
- [Polycystic Ovarian Syndrome](#)
- [Supplements Used in Prevention of Preeclampsia and for Labor Preparation](#)
- [Tools for Supporting Natural Childbirth](#)
- [Treating Postpartum Depression](#)

Author(s)

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