

FIND THE CAUSE AND TREATMENT FOR YOUR INFERTILITY

A STEP BY STEP SELF-ASSESSMENT GUIDE

Francis Polansky, M.D.



Reproductive Medicine Solutions

Palo Alto, CA

www.ReproductiveMedicineSolutions.com

Copyright © 2010 by Francis Polansky, M.D.

All rights reserved.

No part of this book may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, recording, or otherwise, without the prior written permission from the author.

Fertility Assessment Algorithm™ is a trademark of Francis Polansky, M.D. and may not be used without written permission.

Published in the United States of America

Library of Congress Control Number: 2010904216

ISBN 978-0-578-05348-6

Printed in the United States of America

First edition 2010

INTRODUCTION



A Letter to My Readers

Dear Reader,

Recognizing that you might be infertile can be a shocking realization. Most of us grow up unaware that one day we may face a fifteen percent probability of infertility. That is one in seven people.

The psychological impact of not being able to conceive spontaneously and quickly can be profound. It is not uncommon to experience all the stages of loss: refusal to believe, anger, bargaining, despair and acceptance. Perhaps surprisingly, this feeling of loss seems the same whether you are trying to conceive for the first time or you already have a child or children.

The inability to conceive can also put tremendous stress on a couple's intimate relationship. For many couples, experiencing long-term infertility can be a real "trial-by-fire".

And yet, there can be a "silver lining" in all this anguish: the greater the depth of despair, the higher the elation when you succeed and finally hold your little miracle baby in your arms.

The complexity of infertility diagnosis can be daunting and the cost of treatment can be staggering. It does not have to be that way. This workbook, although it cannot guarantee that you will become pregnant, will help you maximize the probability of success and minimize the expense and the time it may take to conceive.

I will show you how to eliminate unnecessary tests and inefficient treatments by following a unique step-by-step formula of fertility investigation that has a single goal: a baby for you as quickly as possible.

This guide assumes the reader has no knowledge of reproductive medicine. As you proceed with your fertility investigation, you will be simply instructed what step to take next based on your medical history, test results, and treatment outcomes up to that point.

I sincerely hope that this guide will help make your journey to a successful pregnancy as short, economical, and as enjoyable as possible. And, once your baby is born, the mission of this book has truly been achieved.

With warmest wishes of success,

A handwritten signature in cursive script that reads "Francis Polansky". The signature is fluid and extends to the right with a long, sweeping tail.

Francis Polansky, M.D.

HOW TO OPTIMIZE YOUR FERTILITY POTENTIAL

Your physical condition could make the difference between achieving a live birth and going through years of frustration of unfulfilled dreams. I urge **both partners** to adhere to the following recommendations as closely as feasible and to start implementing them **as soon as possible**.

1. Optimize your body's acid-alkaline balance

The pH of our blood is slightly alkaline. If we eat acidic food, our bodies have to work extra hard to keep the blood in an alkaline state. This extra work stresses our body and can lead to a decrease of one's fertility potential.

The choices of foods that we eat affect this balance. The typical North American diet is highly acidic. The best way you can maintain the proper blood pH balance is to avoid acid producing foods and increase consumption of alkaline foods. Try not to go out to eat; prepare your own food as much as possible.

A. Minimize or eliminate the intake of the following acid-forming foods:

- All grains including corn, oat, and flour-based foods (**breads, pastas, pastry, cereal, dumplings, tortillas, chips...**) except buckwheat and white rice (up to one cooked cup a day)
- Dairy (**cheese**) except milk, buttermilk, kefir, and yogurt up to one cup a day
- Alcohol
- Coffee except de-cafeinated up to two cups a day
- Cocoa (use carob products instead)
- Nuts (except hazelnuts)
- Beans/legumes except up to one cup (cooked) a day (not canned)
- Cranberries (all other berries are ok)
- **Processed meat** (salami, sausages, hotdogs, canned meat)

B. Increase intake of the following alkaline foods (organically grown if possible)*:

- | | | | |
|------------------|------------------|---------------|-------------|
| • Apples | • Cantaloupe | • Grapefruit | • Parsley |
| • Apricots | • Carrots | • Grapes | • Peach |
| • Artichoke | • Cauliflower | • Kale | • Pear |
| • Asparagus | • Celery | • Kiwi | • Persimmon |
| • Avocado | • Chard | • Lemon | • Pineapple |
| • Bananas | • Coconut | • Lettuce | • Potatoes |

FIND THE CAUSE AND TREATMENT FOR YOUR INFERTILITY

- **Berries**
- Cucumber
- Mango
- **Raisins**
- Beets
- Dates
- Melons (all)
- **Spinach**
- Bell peppers
- Eggplant
- Nectarine
- Salad mix
- Bok choy
- **Figs**
- Olives
- String beans
- Broccoli
- Garlic
- Onions
- Sweet potatoes
- Brussel sprouts
- Ginger
- Orange
- Tomatoes
- Cabbage
- Green peas
- Papaya
- Zucchini

* Items in **bold** are especially helpful.

2. Consume an *abundance* of essential fatty acids:

- Deep-sea fish and fish oil from non-polluted sources
- Flaxseed and pumpkin seed oils
- Broccoli, cauliflower, beets, carrots, kale, collards, cabbage, brussel sprouts
- Raw seeds
- Eggs (no more than one a day on average)

3. Eliminate or minimize intake of trans fatty acids (very important):

- Fried foods (if you must have occasional fried food, use coconut oil only)
- Vegetable shortening
- Margarine
- Lard
- Animal fat
- Hydrogenated vegetable oils
- Junk food

4. Vitamins

It is important that **both** partners take high-potency, high-quality natural multivitamins, and mineral supplements of your choice purchased from a reputable source. The female partner must take a minimum of **1mg of Folic Acid a day**.

5. Exercise

Unless you exercise regularly, several times a week, start *daily* walks (**outdoors**) for a minimum of 45 minutes each day

6. Volatile Organic Compounds (VOC)

Many everyday products release VOC's. It is very important to minimize your exposure (both partners) to VOC's:

TESTS USED IN THE FERTILITY ASSESSMENT ALGORITHM

The Fertility Assessment Algorithm™ relies on only five routinely performed reproductive tests:

- A. Ovarian Function
 1. Blood level of reproductive hormone follicle stimulating hormone (FSH)
 2. Blood level of reproductive hormone estradiol (estrogen, E₂)
 3. Ultrasound examination of the ovaries
- B. Semen Production
 4. Semen analysis (sperm count)
- C. Function of the Uterus and Fallopian Tubes
 5. Hysterosalpingogram (HSG, x-ray of the uterus and Fallopian tubes)

Possible additional tests may be required if the HSG findings are abnormal:

- Hysteroscopy: A thin optical scope is passed through the cervical canal inside the uterus and the endometrial cavity is visualized.
- Laparoscopy: A thin optical scope is inserted into the abdomen through a small incision below the bellybutton and the pelvic organs are examined.

HOW TO USE THE FERTILITY ASSESSMENT ALGORITHM

Your fertility investigation can be done systematically and without delays.

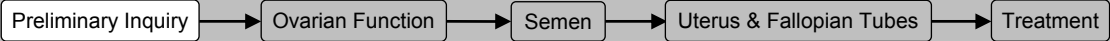
Once you start the fertility assessment's step-by-step formula, you will be guided through the few reproductive tests needed to arrive as efficiently as possible at the most likely diagnosis and the corresponding treatment option(s) for you. Which step to take next will depend on the outcome of all the steps you have already taken. Your step sequence will be unique to your particular condition(s).

Since it is not uncommon to have multiple causes of infertility, it is important that you follow the *algorithm's sequence* exactly even if you believe you already know the cause of your infertility.

At the top of each page of this section is a timeline showing the order of progression through the Fertility Assessment Algorithm™. It also shows which segment of the investigation you are currently in.

There is an area at the bottom of each page where you will mark from which page you arrived and to which page you are progressing. **Please fill in the page numbers diligently.** Should there be a need, they will allow you and your physician to retrace the steps of your fertility investigation.

FERTILITY ASSESSMENT ALGORITHM



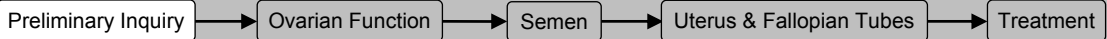
FERTILITY ASSESSMENT ALGORITHM

Please choose the **FIRST** statement that applies to you:

Condition	Action
1. <i>Both</i> ovaries have been removed.	Go to page 23
2. Your uterus has been removed (hysterectomy).	Go to page 24
3. You were told that, for medical reasons, you cannot or should not carry a pregnancy.	Go to page 25
4. <i>Both</i> Fallopian tubes have been removed.	Go to page 26
5. <i>Both</i> Fallopian tubes are blocked (including previous tubal ligation).	Go to page 27
6. You (female partner) are 42 years or older.	Go to page 28
7. The <i>typical</i> number of days between onsets of your periods is 40 or more.	Go to page 29
8. You do not have menstrual periods.	Go to page 30
9. Because of previous vasectomy, there are no sperm in the semen.	Go to page 31
10. You can conceive <i>without difficulty</i> but you have had <i>three or more</i> miscarriages.	Go to page 32
11. None of the above statements apply to you.	Go to page 33

Go to page

FERTILITY ASSESSMENT ALGORITHM



LENGTH OF "EXPOSURE" TO CONCEPTION¹

Let's first address the issue of "length of infertility":

There is no distinction between having unprotected intercourse and "trying" to conceive. They both represent "exposure" to conception. It is very important that you do not wait too long. On the other hand, you and your partner should have sufficiently long "exposure" to pregnancy before spending time, money, and emotional energy on fertility tests and treatment.

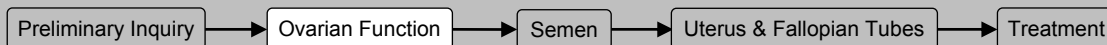
In the table below, match the female partner's age and the length of time (in months) that you have been sexually active without doing anything to keep you from conceiving. Note that miscarriages are counted as infertility.

If, on average, you are having intercourse four times a month or more often, you do not have to worry about timing intercourse to ovulation. There is no upper limit on the frequency of intercourse.

This table will guide you when to start your fertility testing. Your first test should be an assessment of the quality of your eggs (your ovarian reserve). Starting with an egg quality assessment is the most efficient way of carrying out your fertility investigation.

Length of Exposure Female Age	No Exposure	1 to 3 months	4 to 6 months	7 to 9 months	10 to 12 months	13 or more months
Less than 36	Begin sexual activity without contraception	Continue sexual activity without contraception	Continue sexual activity without contraception	Continue sexual activity without contraception	Continue sexual activity without contraception	Go to page 36
36 to 37	Begin sexual activity without contraception	Continue sexual activity without contraception	Continue sexual activity without contraception	Continue sexual activity without contraception	Go to page 36	Go to page 36
38 to 39	Begin sexual activity without contraception	Continue sexual activity without contraception	Continue sexual activity without contraception	Go to page 36	Go to page 36	Go to page 36
40 to 41	Begin sexual activity without contraception	Continue sexual activity without contraception	Go to page 36	Go to page 36	Go to page 36	Go to page 36

¹The male partner should not be taking calcium channel blocker medication (see page 125).



ASSESSMENT OF OVARIAN RESERVE

Since the ability of ovaries to produce normal eggs plays a central role in the process of conception, an assessment of your ovarian function (ovarian reserve testing) should be your first test.

A woman's egg quality refers to the level of high quality eggs that are genetically and biologically capable of producing a healthy baby. Examining your ovarian reserve will require a blood test to measure levels of follicle stimulating hormone (FSH) and estradiol (estrogen, E₂) and an ultrasound examination of your ovaries:

1. Hormonal Assessment:

FSH, produced by the pituitary gland located at the base of the brain, stimulates ovaries to produce eggs. If the ovaries cannot produce normal eggs, the FSH level is increased. Estradiol production by the ovaries influences the FSH secretion and is also related to the quality of the eggs.

If you had your FSH and estradiol measured (from the same blood sample) within the last three months, use those results. **Please note that you must not take any hormonal medications for at least four weeks prior to the test.**

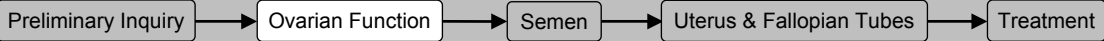
To schedule your FSH and estradiol testing:

Condition	Action
<ul style="list-style-type: none"> Your periods are less than 40 days apart. 	<ul style="list-style-type: none"> Your blood must be drawn on cycle day 2, 3, or 4. Cycle day 1 is the first day of a <i>full</i> flow.
<ul style="list-style-type: none"> Your periods are 40 or more days apart. 	<ul style="list-style-type: none"> You can have your blood drawn anytime, regardless of your cycle day.
<ul style="list-style-type: none"> You do not have menstrual periods. 	
<ul style="list-style-type: none"> You had a hysterectomy. 	<ul style="list-style-type: none"> You will have to use "ovulation predictor" testing¹ to determine when to have your blood drawn.

¹Urine ovulation predictor tests can be purchased over the counter at a drug store. Start your testing any day and continue once a day at approximately the same time. It may take 30 or more days before the test turns positive. Once the test has turned positive, have your blood drawn 16, 17, or 18 days later. If you have tested for 39 consecutive days without the test turning positive, stop the testing and have your blood drawn any day.

- Continue on the next page -

FERTILITY ASSESSMENT ALGORITHM



2. The ultrasound of your ovaries will determine the number of antral follicles (see below) within the ovaries. Their number is related to the quality of your eggs. Ideally, there should be 5 to 8 antral follicles **per ovary**.

The ultrasound can be scheduled anytime during your cycle, even when you are having a menstrual period. If you had an ultrasound assessment of the antral follicles within the last six months, you do not have to repeat it.

You will need to emphasize to the person doing the ultrasound that you want to know the **total number of antral follicles in both ovaries**. Antral follicles will be seen as dark circles typically found in the periphery of the ovaries.

In the following table, enter your ultrasound and FSH/E₂ results as "Hormonal test #1". If you are later instructed to repeat the hormonal test, use the 2nd and the 3rd row.

	Date	Total number of antral follicles for both ovaries	FSH level	Estradiol (E ₂) level
Ultrasound			N/A	N/A
Hormonal test #1		N/A		
Hormonal test #2		N/A		
Hormonal test #3		N/A		

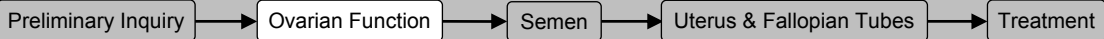
In the ovarian reserve tables on pages 38 through 42, match your total antral follicle count for **both** ovaries with your FSH and estradiol results to find your next step. If one of your ovaries has been surgically removed, multiply the number of antral follicles within the remaining ovary by 2.

Your age will determine which ovarian reserve table to use:

Female Age	Table
Less than 35	Go to page 38
35 to 37	Go to page 39
38 to 40	Go to page 40
41 to 42	Go to page 41
43 and older	Go to page 42

Go to page

FERTILITY ASSESSMENT ALGORITHM



YOU SHOULD BE ABLE TO CONCEIVE WITH YOUR EGGS

The results of your ovarian reserve testing suggest that you should be able to conceive with your eggs. No additional egg quality testing is necessary at this point.

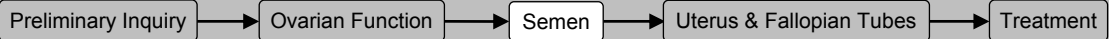
To find your next step, please choose the **FIRST** statement that applies to you:

Condition	Action
1. You had a hysterectomy.	<ul style="list-style-type: none"> Your fertility assessment is complete; no semen test is needed at this point, since semen examination will be a part of prerequisites for gestational surrogacy.
2. You were told that, for medical reasons, you cannot or should not carry a pregnancy.	<ul style="list-style-type: none"> You can proceed to gestational surrogacy: Go to page 95.
3. Both Fallopian tubes have been removed.	<ul style="list-style-type: none"> Your next step is an assessment of your endometrial cavity. No semen test is needed at this point, since semen examination will be a part of prerequisites for <i>in vitro</i> fertilization.
4. Both Fallopian tubes are blocked.	<ul style="list-style-type: none"> For the assessment of your endometrial cavity: Go to page 74.
5. You are 42 years or older.	<ul style="list-style-type: none"> You are a candidate for <i>in vitro</i> fertilization. No semen test is needed at this point, since semen examination will be a part of prerequisites for <i>in vitro</i> fertilization. Your next step is an assessment of your endometrial cavity: Go to page 74.
6. The typical number of days between onsets of your periods is 40 or more days.	<ul style="list-style-type: none"> If no sperm are being ejaculated because of previous vasectomy: Go to page 52.
7. You do not have menstrual periods	<ul style="list-style-type: none"> Otherwise your next step is the investigation of the lack of regular ovulations. Go to page 47.
8. None of the above statements apply to you.	<ul style="list-style-type: none"> If no sperm are being ejaculated because of previous vasectomy: Go to page 52. Otherwise your next step is an assessment of the semen quality: Go to page 53.

From page

Go to page

FERTILITY ASSESSMENT ALGORITHM



SEMEN ANALYSIS

The result of your ovarian reserve testing suggests that you should be able to conceive with your eggs.

Since a significant portion of all infertility is due to male factor infertility and since the presence of male infertility has a major impact on the direction of fertility testing and treatment, a semen assessment should be your next test.

Due to a sometimes profound variation in the semen parameters, two or more semen analyses should be done at least three days apart. The testing laboratory will typically ask for a three day abstinence from ejaculation prior to semen collection. The specimen must be collected by masturbation.

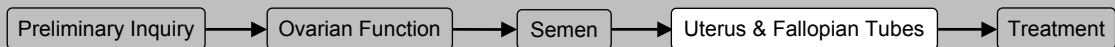
Once you have obtained the semen analysis result, enter the values for semen volume, sperm concentration (sperm count), and the percentage of total motility (percentage of all moving sperm) in the table below.

If you had one or more semen analyses within the last two years, you can use those results. If more than two semen analyses results are available, use the values for the two most recent ones.

	First Semen Analysis	Second Semen Analysis	Units
• Date			
• Volume			ml
• Concentration (sperm count)			million/ml
• Total motility			%
• Total motile sperm			Millions per ejaculate

Calculate the **total motile sperm** per ejaculate by multiplying the semen volume in milliliters (ml) times sperm concentration (sperm count) in millions per ml times fraction of total motile sperm.

- Continue on the next page -



HYSTEROSALPINGOGRAM (HSG)

Hysterosalpingogram (HSG, x-ray of the uterus and Fallopian tubes) is a test to evaluate the inside of your uterus (endometrial cavity) and the Fallopian tubes (the connection between the ovaries and uterus). Your endometrial cavity must be free of polyps, myomas (fibroids, hard nodules inside the uterine cavity), and intrauterine adhesions (scarring). In addition, the Fallopian tubes must be open to allow for meeting of the egg and sperm.

HSG is a quick procedure done in a radiology department. If you have had an HSG within the last 12 months, you do not need to repeat it.

During the 10 to 20 minute HSG test, a thin tube is passed through the cervical canal inside the uterine cavity and radio-opaque dye is slowly instilled. Two or more x-ray pictures are taken. You may experience menstrual-like cramping when the tube is being passed and when the dye is instilled. The result can be interpreted right away.

Ask the radiologist (and your physician if s/he will be reading the HSG images as well) to focus on the isthmic portion of your Fallopian tubes (the segment of tubes adjacent to the uterus) to look for signs of "extra channels", filling defects, and out-pouching of the tubal lumen. If any of these are found in the isthmic portion of either tube, you have salpingitis isthmica nodosa. This is a rare condition whose causes are poorly understood and the HSG images must be **carefully evaluated** in order to detect it.

1. If the HSG findings were normal, your fertility assessment is complete: **Go to page 73.**
2. If the HSG showed only **ONE** of the following conditions:

Findings	Description	Action
• Filling defect	Polyp(s), fibroid(s) or scarring in the endometrial cavity.	Go to page 62
• Pelvic adhesions	Scarring outside the uterus.	Go to page 63
• Proximal tubal block	One or both Fallopian tubes did not fill with dye.	Go to page 63
• Hydrosalpinx	One or both Fallopian tubes are blocked at the far end (clubbed tubes).	Go to page 65
• Salpingitis isthmica nodosa	See text above.	Go to page 66

- Continue on the next page -