

All of Life Inventory: Enhancing Fertility & Conception

Background. As [Stefankiewicz, et al., 2006](#) writes, "In the last 50 years a significant decrease in human fertility has been observed" - with infertility becoming today, in the words of another research team, "a major, multifaceted issue worldwide whose prevalence is increasing in both high- and low-income countries" [Petraglia, et al., 2013](#). With one exception, statistical studies consistently confirm a trend of dramatic increase:

- A study of 7,600 women in the United States found infertility issues have grown from 10 percent (roughly 1 in 10) to 16 percent (1 in every 6 couples) [Thoma, et al., 2013](#) - with similar figures reported in Great Britain [Leonard, 2012](#).
- Up to 16% of couples in Canada are experiencing infertility - a near doubling since 1992 [Bushnik, et al., 2012](#).
- A Chinese study of 12,488 couples found a shift from 1.3% infertility for women born in the 1950s to 11.4% for women born in the 1980s [Zhang, et al., 2014](#).
- Studies in Poland [Merritt, et al., 2013](#) and Norway [Rostad, et al., 2013](#) also document a significant decline in fertility over the last 10-20 years, with "permanent involuntary childlessness" approximately doubling since the 1970s - as well as rising in the Czech Republic, Spain and other European countries [te Velde, et al., 2012](#).

What's going on? Why are more and more couples struggling? With a growing body of research, it has become clear that fertility challenges have an enormously varied set of potential contributors - with a "large number of environmental and lifestyle factors" that may play a role [Barazani, et al., 2014](#). The purpose of this inventory is to catalogue and map any possibilities identified in the larger medical literature in terms of correlations or contributions to conception difficulties. It is based on a review of hundreds of research studies that explore potential factors associated with pregnancy and conception.

Instructions. This inventory may be completed by an individual or a couple together. As a whole, the inventory aims to illuminate particular configurations of vulnerabilities in a given couple's situation - and, more broadly, to foster a deeper national conversation about the diverse array of vulnerabilities that appear to be shaping disease risk. It is intended only as a self-exploration tool to assist an individual or couple who is seeking deeper understanding of the many potential factors that can influence the likelihood of fertility and pregnancy. Each of the questions derives from at least one scientific study documenting evidence that suggests this factor may, for some couples, be a potential contributor to infertility and conception difficulty (click on the hyper-texted study - "[Palmer, et al., 2001](#)" - to see research details). This includes both positive factors protecting fertility [identified by boxes] and negative factors diminishing the likelihood of fertility.

In no case should any of the items or factors be interpreted as a "cause" of infertility. Instead, the inventory offers a view of the complex and diverse range of factors identified in the scientific literature as potential contributors to a difficulty conceiving. Given the personal nature of many questions, answers may be kept confidential and private. To score the inventory, total up all "yes" answers in each section - and combine that with the total "no" answers of questions in boxes. That total can then be compared with the number of possible vulnerabilities in each section - e.g., "we have 18/28 vulnerabilities in nutrition, but 0/8 in toxic drugs..." At the bottom of the inventory, additional suggestions are provided for next steps. If you have any questions, feel free to contact Jacob at jacob@alloflife.org. © 2014 All of Life

1. Conception & birth [7]

- Was the woman's mother exposed to DES (diethylstilbestrol) when he or she was in the womb (e.g., via medical treatment for breast/prostate cancers or ingestion of supplemented cattle feed)? [Palmer, et al., 2001](#); [Schrager, et al., 2004](#)
- Did the man's parents have a difficult time conceiving (subfertility)? [Ramlau-Hansen, et al., 2008](#)
- Did the man's mother receive fertility treatment? [Jensen, et al., 2007](#); [Ramlau-Hansen, et al., 2007](#)
- Was the man exposed to high levels of caffeine in his mother's womb? [Ramlau-Hansen, et al., 2009](#); [Dorostghoal, et al., 2012](#)
- Did the man's mother drink alcohol when he was in the womb? [Ramlau-Hansen, et al., 2010](#)
- Did the man or woman's mother [Jensen, et al., 1998](#); [Ramlau-Hansen, et al., 2007](#); [Richthoff, et al., 2008](#); [Axelsson, et al., 2013](#) or father [Axelsson, et al., 2013](#) smoke during his/her pregnancy or early childhood?
- When the woman born, was she small for gestational age (SGA) or at a low birth weight (LBW)? [Vikström, et al., 2014](#)

2. Early childhood & teen years [4]

- Did the woman experience extreme hardships or abuse as a child? [Harville, et al., 2013](#)
- Did the man or woman live as a child in an area in close proximity to nuclear testing - e.g., the Nevada Test Site (1951-1992) [Stone, et al., 2012](#)
- Did the woman experience her first menstrual cycle before age 13? [Weghofer, et al., 2013](#)
- Did the woman initially get pregnant as an adolescent? [Leke, et al., 1993](#)

3. Current characteristics & demographics [8]

- Is the woman older than 35? [Kelly-Weeder, et al., 2006](#); [Schmidt, et al., 2011](#); [Zhang, et al., 2014](#)
- Is the man older than 34? [Ford, et al., 2000](#); [Hossain, et al., 2012](#); [Stone, et al., 2013](#)
- Is the man of black ethnicity? [Povey, et al., 2012](#)
- Is the woman black [Bitler, et al., 2006](#); [Chandra, et al., 2013](#) Hispanic or otherwise non-Caucasian? [Bitler, et al., 2006](#)
- Does the woman have a relatively lower educational level [Esmaeilzadeh, et al., 2012](#); [Pakpour, et al., 2012](#); [Thoma, et al., 2013](#) - e.g., a high school dropout or high school graduates with no college? [Bitler, et al., 2006](#)
- Does the woman's life reflect a pattern of general social deprivation? [Hassan, et al., 2004](#)
- Was the woman born in the 1980s or later? [Zhang, et al., 2014](#)
- Has the woman spent a lot of time residing on a farm, ranch or in a rural area? [Greenlee, et al., 2003](#)

4. Work logistics [9]

- Is the man not working? [Povey, et al., 2012](#)
- Does the woman work full time? [Axmon, et al., 2006](#)
- Does the woman work as a schoolteacher? [Perros, et al., 2011](#)
- Does the man commute to work? [Irgens, et al., 1999](#)
- Is the man working in a manual labor job? [Povey, et al., 2012](#)
- Does woman do shift work? [Bisanti, et al., 1996](#) [Ahlborg, et al., 1996](#)
- Does the woman work nights [Ahlborg, et al., 1996](#); [Axmon, et al., 2006](#) or stay up late for other reasons? [Liu, et al., 2013](#)
- Does the woman work long hours? [Tuntiseranee, et al., 1998](#)
- Do both individuals work over 70 hours/week? [Tuntiseranee, et al., 1998](#)

5. Stress & mental health [6]

- Is the man [Alvarez, et al., 2012](#) or woman [Axmon, et al., 2006](#); [Alvarez, et al., 2012](#) experiencing stress at work from adverse work conditions [Zhang, et al., 2014](#) or anything else about the job?
- Is the man facing a lot of stress generally? [Sheiner, et al., 2003](#), [Hall, et al., 2012](#)
- Has the woman been experiencing significant stress [Louis, et al., 2011](#); [Liu, et al., 2013](#) or psychological distress [Hjollund, et al., 1999](#) - including but not limited to uneasiness, helplessness, and despair? [Liu, et al., 2013](#)
- Does the woman experience depression? [Schweiger, et al., 2012](#)
- Does the woman have an eating disorder? [Schweiger, et al., 2012](#)

6. Physical activity [5]

- Is the man's job fairly sedentary [Sharpe, 2010](#) - e.g., involving extended sitting periods? [De Fleurian, et al., 2009](#)
- Overall, does the man live the typical, Western lifestyle? [Sharpe, 2010](#)
- Does the woman have either a moderate [Wise, et al., 2012](#) or vigorous physical activity level? [Rich-Edwards, et al., 2002](#)
- If the woman is obese, is she currently experiencing high levels of vigorous physical activity? (≥ 5 h/week) [Wise, et al., 2012](#)
- If the woman is not obese, is she currently experiencing high levels of vigorous physical activity (≥ 5 h/week) [Wise, et al., 2012](#) - including practicing sports to an excessive degree? [Schilling, et al., 2012](#)

7. Physical size [7]

- Is the man [Rais, et al., 2013](#) or woman [Grodstein, et al., 1994](#); [Rich-Edwards, et al., 2002](#) underweight - with a BMI below 18.5 [Schilling, et al., 2012c](#) or 20? [Grodstein, et al., 1994w](#); [Rich-Edwards, et al., 2002w](#)

- Is the man on a weight loss diet? [Braga, et al., 2012](#)
- Does the man have a high body mass index (BMI) [Braga, et al., 2012](#) [Jurewicz, et al., 2014](#) - e.g., above 25? [Schilling, et al., 2012](#)
- Does the woman have a high body mass index (BMI) [Esmacilzadeh, et al., 2012](#) [Wise, et al., 2013](#) - e.g., above 24 [Rich-Edwards, et al., 1994](#); [Rich-Edwards, et al., 2002](#), 25 [Hassan, et al., 2004](#) [Schilling, et al., 2012](#) or 27? [Grodstein, et al., 1994](#)
- Is the man obese [Shayeb, et al., 2009](#) and/or diagnosed with metabolic syndrome (MetS)? [Leisegang, et al., 2014](#); [Lotti, et al., 2013](#)
- Is the woman obese [Kelly-Weeder, et al., 2006](#); [Triunfo, et al., 2014](#), reflected in a waist circumferences ≥ 33 inches and large waist-to-hip ratios? [Wise, et al., 2013](#)
- Has the woman had steady weight gain in adult life [Greenlee, et al., 2003](#) - to the point of becoming even slightly [Grodstein, et al., 1994](#) overweight [Triunfo, et al., 2014](#) (at levels lower than those considered to be obese)? [Rich-Edwards, et al., 1994](#)

8. Nutrition & diet [28]

- Is the man eating lots of fruit [Gaskins, et al., 2012](#); [Braga, et al., 2012](#); [Eslamian, et al., 2012](#) - including, for instance, tomatoes, apricots and peaches? [Mendiola, et al., 2009](#)
- Does the man consume a diet high in other anti-oxidant nutrients, including cryptoxanthin, and β -carotene? [Mínguez-Alarcón, et al., 2012](#)
- Does the man have a sufficiently high intake of lycopene (found in guavas, watermelon, papaya, grapefruit, mango, persimmons, sweet red peppers, asparagus, red/purple cabbage, carrots, sun dried tomatoes, tomato purée, tomatoes & baked beans)? [Mendiola, et al., 2010](#); [Mínguez-Alarcón, et al., 2012](#)
- Does the man have a healthy intake of overall fiber? [Mendiola, et al., 2010](#)
- Is the man eating a diet rich in vegetables [Gaskins, et al., 2012](#) - especially lettuce [Mendiola, et al., 2009](#) and dark green vegetables? [Eslamian, et al., 2012](#)
- Does the woman have a healthy total intake of vegetables? [Chavarro, et al., 2007](#)
- Does the woman's diet have good sources of iron from either plants or supplements? [Chavarro, et al., 2007](#)
- Does the man have adequate levels of zinc [Colagar, et al., 2009](#); [Marzec-Wróblewska, et al., 2012](#) magnesium and calcium? [Marzec-Wróblewska, et al., 2012](#)
- Does the man have an adequate intake of vitamin C? [Mendiola, et al., 2010](#); [Mínguez-Alarcón, et al., 2012](#)
- Does the man have adequate vitamin D supplementation and/or sufficient sunlight exposure [Pludowski, et al., 2013](#) - as reflected in appropriate 25(OH)D blood levels (an indicator of vitamin D status)? [Yang, et al., 2012](#)
- Does the man have a high intake of legumes [Gaskins, et al., 2012](#), whole grains [Gaskins, et al., 2012](#), and cereals? [Braga, et al., 2012](#)
- Does the woman regularly get enough B vitamins, especially folate/folic acid? [Chavarro, et al., 2008](#); [Mendiola, et al., 2010](#)
- Has the woman been taking a multivitamin? [Chavarro, et al., 2007](#)
- Does the man have a healthy intake of chicken? [Gaskins, et al., 2012](#)
- Does the man consume adequate amounts of omega-3 polyunsaturated fatty acid (EPA, DHA)? [Safarinejad, et al., 2010](#); [Safarinejad, 2011](#); [Attaman, et al., 2012](#)
- Does the man have a high intake of fish [Gaskins, et al., 2012](#), shellfish [Mendiola, et al., 2009](#) and sea food generally? [Eslamian, et al., 2012](#)
- Does the man have a significantly high intake of healthy carbohydrates [Mendiola, et al., 2010](#) from potatoes [Mendiola, et al., 2009](#) or any other food?
- Does the woman regularly eat low-carbohydrate food that doesn't spike blood sugar - as reflected in a low "dietary glycemic load"? [Chavarro, et al., 2007](#); [Chavarro, et al., 2009](#)
- Does the man eat high levels of saturated fats [Attaman, et al., 2012](#); [Jensen, et al., 2013](#), polyunsaturated/monounsaturated fat [Revonta, et al., 2010](#), or total fat? [Revonta, et al., 2010](#)
- Did the woman consume higher levels of polyunsaturated fat [Revonta, et al., 2010](#) and/or less saturated fat? [Revonta, et al., 2010](#)
- Does the man regularly eat processed meat [Mendiola, et al., 2010](#); [Eslamian, et al., 2012](#), meat products [Mendiola, et al., 2009](#) or red meat? [Braga, et al., 2012](#)

- Does the woman eat a lot of higher fat dairy products? [Chavarro, et al., 2007](#)
- Does the man eat yogurt and full-fat items like cheese? [Mendiola, et al., 2009](#); [Afeiche, et al., 2013](#)
- Does the man regularly drink skimmed milk? [Mendiola, et al., 2009](#); [Eslamian, et al., 2012](#)
- Does the woman eat more vegetable sources of protein than animal sources alone? [Chavarro, et al., 2007](#)
- Does the woman eat a higher amount of monounsaturated fats [Chavarro, et al., 2007](#) - when compared with trans fats (fried foods)? [Liu, et al., 2013](#)
- Does the man regularly eat and drink products with lots of refined sugar? [Eslamian, et al., 2012](#)
- Does the woman consume any kind of caffeine daily [Hatch, et al., 1993](#) - especially if the main source is coffee? [Jensen, et al., 1998](#)
- Does the woman consume caffeine at especially high levels - more than 300 mg daily (~3 cups of coffee or tea) [Stanton, et al., 1995](#) or 500 mg daily (~6 cups of coffee or tea) [Bolúmar, et al., 1997](#) [Hassan, et al., 2004](#) - or more than 7 grams of caffeine per month? [Grodstein, et al., 1993](#)
- Does the man consume high levels of caffeine as well? [Jensen, et al., 1998](#)

9. Toxic drugs [9]

- Do either the man [Hassan, et al., 2004](#); [Gaur, et al., 2010](#); [Braga, et al., 2012](#); [Condorelli, et al., 2014](#) or the woman [Greenlee, et al., 2003](#); [Liu, et al., 2013](#) consume any alcohol?
- Has the woman experienced more hangovers during the previous year? [Revonta, et al., 2010](#)
- Does the woman currently smoke? [Bolumar, et al., 1996](#); [Jensen, et al., 1998](#); [Hull, et al., 2000](#); [Greenlee, et al., 2003](#); [Hassan, et al., 2004](#); [Kelly-Weeder, et al., 2006](#); [Kelly-Weeder, 2010](#); [Liu, et al., 2013](#)
- Has the woman been exposed to second-hand cigarette smoke? [Hull, et al., 2000](#); [Greenlee, et al., 2003](#); [Esmailzadeh, et al., 2012](#)
- Does the man smoke [Mitra, et al., 2012](#); [Braga, et al., 2012](#) - especially heavily [Hull, et al., 2000](#); [Qin, et al., 2003](#); [Hassan, et al., 2004](#); [Richthoff, et al., 2008](#); [Gaur, et al., 2010](#) and/or for many years? [Qin, et al., 2003](#)
- Does the man or woman chew tobacco? [Kumar, et al., 2009](#)
- Does the man [Smith, 1983](#); [Fronczak, et al., 2012](#); [Pichini, et al., 2012](#); [Alvarez, et al., 2012](#) or woman [Smith, 1983](#); [Pichini, et al., 2012](#) use cannabis/marijuana in any form?
- Does the man use any illegal drugs, including cocaine [Fronczak, et al., 2012](#); [Pichini, et al., 2012](#) methamphetamines [Fronczak, et al., 2012](#) heroin, methadone [Ragni, et al., 1985](#); [Ragni, et al., 1988](#) and opioid narcotics? [Smith, 1983](#); [Fronczak, et al., 2012](#)
- Does the woman abuse any drugs [Pichini, et al., 2012](#), including narcotics or barbiturates? [Smith, 1983](#)
- Does the man or woman abuse anabolic-androgenic steroids? [Schilling, et al., 2012](#); [Fronczak, et al., 2012](#)

10. Environmental toxins [25]

- Has the man been exposed to aromatic [Tielemans, et al., 1999](#) or organic solvents, [Sallmén, et al., 1998](#) [De Fleurian, et al., 2009](#) including some ethylene glycol ethers [Cherry, et al., 2014](#) found in paint strippers [Cherry, et al., 2014](#), as well as resins, lacquers, paints, varnishes, gum, perfume, dyes, inks, as a constituent of paints and pastes, cleaning compounds, liquid soaps, cosmetics, and hydraulic fluid? [Sheiner, et al., 2003](#); [Jensen et al., 2006](#); [Sallmén, et al., 2006](#); [Multigner, et al., 2007](#); [Mendiola, et al., 2008](#); [Cherry, et al., 2008](#); [Bonde, 2010](#)
- Has the man had work experiences with highly concentrated chemicals, including wartime deployment [Doyle, et al., 2006](#); [Kelsall, et al., 2007](#) and agricultural pesticide application? [Sallmén, et al., 2006](#)
- Has the woman worked in places of higher chemical exposure - including hairdressing [Baste, et al., 2008](#); [Ronda, et al., 2009](#) greenhouses [Rosano, et al., 2009](#) shoe manufacturing factories [Sallmén, et al., 1995](#); [Sallmén, et al., 2008](#) dry cleaning shops [Sallmén, et al., 1995](#) the metal industry [Sallmén, et al., 1995](#) the plastic industry [Hougaard, et al., 2009](#); [De Matteo, et al., 2012](#) the printing industry [Svensson, et al., 1992](#) or the wood-processing industry? [Taskinen, et al. 1999](#)
- Has the woman experienced daily any known low exposure of toluene - an organic solvent often used in the printing industry [Svensson, et al., 1992](#); [Plenge-Bönig, et al., 1999](#); [Sallmén, et al., 2008](#) or of formaldehyde - commonly used in the wood-processing industry? [Taskinen, et al. 1999](#)

--Has the woman experienced daily or high exposure to other organic solvents [Sallmén, et al., 1995](#); [Smith, et al., 1997](#) - e.g., n-hexane and hexane isomers, methyl ethyl ketone, acetone, ethyl acetate and dichloromethane? [Sallmén, et al., 2008](#)

--Has the woman been exposed to pesticides [Smith, et al., 1997](#) [Sallmén, et al., 2006](#) [Rosano, et al., 2009](#) [Liu, et al., 2013](#) including DDT/DDE? [Bastos, et al., 2013](#)

--Has the man been exposed to pesticides [Thonneau, et al., 1993](#); [Sallmén, et al., 2006](#) including DDT/DDE [Bonde, 2010](#) and ethylen dibromide (EDB) via soil or food? [Jensen et al., 2006](#); [Bonde, 2010](#)

--Have the man or woman [Greenlee, et al., 2003](#) been exposed to any of the following herbicides: 2, 4-D (2,4-dichlorophenoxyacetic acid) [Sheiner, et al., 2003](#) glyphosate, the active ingredient in the herbicide, Roundup® [Samsel, et al., 2013](#) or benzimidazole/ benzimidazole derivatives - including fungicides [Greenlee, et al., 2003](#) such as carbendazim which is used to control plant diseases in cereals and fruits? [Lutz, et al., 2012](#)

--Has the man been exposed to carbon disulfide through air, skin or water in a work-site that uses it in manufacturing processes? [Jensen et al., 2006](#); [Bonde, 2010](#)

--Was the man exposed to dibromochlorophane by drinking or breathing vapors from chlorinated water? [Sheiner, et al., 2003](#); [Jensen et al., 2006](#); [Bonde, 2010](#)

--Did the woman consume water from city/municipal sources [Greenlee, et al., 2003](#), untreated water [Bastos, et al., 2013](#) or canned foods? [Bastos, et al., 2013](#)

--Has the woman had other exposures to toxins, including chemical dusts [Smith, et al., 1997](#) toxic fumes [De Fleurian, et al., 2009](#) chemicals in perms [Liu, et al., 2013](#) chemicals in housing decorations [Liu, et al., 2013](#) or endocrine disrupting chemicals (EDC), including BPA? [Caserta, et al., 2013](#)

--Has the man been exposed to at least one toxin or pollutant [Mendiola, et al., 2008](#) - especially with a significantly high average duration of exposure? [Mendiola, et al., 2008](#)

--Has the man been exposed to glues or silicones? [Mendiola, et al., 2008](#)

--Was the man exposed to Nigerian Bonny light crude oil (BLCO) [Adedara, et al., 2012](#) or the petrochemical benzene [Qin, et al., 2003](#) - as found in vapors from automobile service stations, oil, gasoline, motor vehicle exhaust, industrial emissions, wood smoke, tobacco smoke, soft drinks or contaminated groundwater?

--Has the man been exposed to traffic exhaust fumes, dioxins, or combustion products [Sharpe, 2010](#) - including polycyclic aromatic hydrocarbons (PAHs) [De Fleurian, et al., 2009](#) found in vehicle exhaust in oil, coal, and tar deposits, and produced as byproducts of fuel burning or in meat cooked at high temperatures?

--Has the woman ever been exposed to heavy metals in the surrounding environment? [Mendiola, et al., 2008](#) [Liu, et al., 2013](#)

--Has the man been exposed to heavy metals [Irgens, et al., 1999](#); [De Fleurian, et al., 2009](#) such as mercury [Sheiner, et al., 2003](#); [Bonde, 2010](#) aluminum, chromium, iron? [Marzec-Wróblewska, et al., 2012](#)

--Does the man have higher levels of cadmium [Wu, et al., 2008](#) [Marzec-Wróblewska, et al., 2012](#) - as found in cigarette smoke [Kiziler, et al., 2007](#) and various industrial applications?

--Has the man been exposed to inorganic lead [Sheiner, et al., 2003](#); [Jensen et al., 2006](#); [Bonde, 2010](#); [Marzec-Wróblewska, et al., 2012](#); [Wu, et al., 2012](#) [Cherry, et al., 2014](#) via cigarette smoke [Kiziler, et al., 2007](#) or occupational lead exposure such as at a car battery plant [Viscum, et al., 1999](#) at a blood level of 40 micrograms/dl or more? [Alexander, et al., 1996](#)

--Has the woman been exposed to different kinds of radiation [Liu, et al., 2013](#) - including radiation at video display terminals [Smith, et al., 1997](#) or in a uniquely hot work environment? [Liu, et al., 2013](#)

--Has the man been exposed to work environments with moderate [Bonde, 2010](#) or high levels of radiant heat [Jensen et al., 2006](#); [Sheiner, et al., 2003](#); [De Fleurian, et al., 2009](#) - such as steel welding? [Bonde, 1993](#); [Jensen et al., 2006](#); [Bonde, 2010](#)

--Has the man been exposed at work or elsewhere to any of the following: electromagnetic fields (EMFs) [Irgens, et al., 1999](#) at a level of 10-GHz EMF (microwave) [Kumar, et al., 2012](#); [Kesari, et al., 2012](#) or X-rays [Thonneau, et al., 1993](#) - especially testicular x-irradiation? [Clifton, et al., 1983](#) (see also [Sheiner, et al., 2003](#); [Jensen et al., 2006](#); [Bonde, 2010](#))

--Has the man been exposed to radiofrequency electromagnetic radiations (RF-EMR) emitted from extensive mobile/cell phone use [De Iuliis, et al., 2009](#) [Kesari, et al., 2012](#) [La Vignera, et al., 2012](#) -e.g., usage for more than 10 years? [Jurewicz, et al., 2014](#)

--Does the man typically wear loose underwear or boxer shorts? [Povey, et al., 2012](#); [Jurewicz, et al., 2014](#)

11. Medical treatment and procedures [24]

- Was the man [Green, et al., 2010](#); [Wasilewski-Masker, et al., 2014](#) or woman [Barton, et al., 2013](#) treated for cancer as a child?
- If treated for cancer early in life, was the cancer treatment during puberty or after puberty? [Reinmuth, et al., 2013](#)
- Did the man experience past radiation treatment [Meistrich, et al., 2013](#) - especially pelvic radiotherapy [Reinmuth, et al., 2013](#) testicular radiation [Wasilewski-Masker, et al., 2014](#) or total body irradiation? [Rovó, et al., 2013](#)
- Did the woman experience pelvic radiation [Gracia, et al., 2012](#) [Reinmuth, et al., 2013](#) or high levels of uterine radiation? [Barton, et al., 2013](#)
- Did the woman experience a higher number of chemotherapy treatments [Falorio, et al., 2013](#) - at least more than one round of treatment? [Falorio, et al., 2013](#)
- Was the woman exposed to alkylating chemotherapy drugs at high levels [Barton, et al., 2013](#) as reflected in a higher alkylating agent dose score? [Gracia, et al., 2012](#)
- Specifically, was the woman treated with any of the following drugs: etoposide, carboplatin, cisplatin [Reinmuth, et al., 2013](#) or cyclophosphamide (CYC)? [Green, et al., 2010](#); [Harward, et al., 2013](#)
- Was the man exposed to high levels of alkylating chemotherapy drugs [Meistrich, et al., 2013](#) as reflected in a higher cumulative alkylating agent dose (AAD) score? [Green, et al., 2010](#); [Wasilewski-Masker, et al., 2014](#)
- Specifically, was the man treated with any of the following cytotoxic therapeutic agents [Meistrich, et al., 2013](#): etoposide, carboplatin, cisplatin [Reinmuth, et al., 2013](#) or cyclophosphamide (CYC) [Green, et al., 2010](#) for cancer, kidney disorders or other diseases?
- Was the man treated with bleomycin sed for Hodgkin's lymphoma, squamous cell carcinomas, testicular cancer, or plantar warts? [Wasilewski-Masker, et al., 2014](#)
- Was the man treated for sickle cell anemia with hydroxyurea? (Hydrea, Droxia)? [Berthaut, et al., 2008](#)
- Was the man older than 25 years at hematopoietic stem cell transplantation [Rovó, et al., 2013](#) and/or did he experience ongoing chronic graft-versus-host disease after stem cell transplantation? [Rovó, et al., 2013](#)
- Did the man experience testicular surgery [Povey, et al., 2012](#), testicular removal [Wasilewski-Masker, et al., 2014](#) or another organ removal of the genital tract? [Wasilewski-Masker, et al., 2014](#)
- Has the man or woman had pelvic surgery? [Bahamondes, et al., 1994](#)
- Have the woman received any of the following surgical procedures: cervical surgery/colposcopy for cervical intraepithelial neoplasia (CIN) [Spracklen, et al., 2013](#) appendectomy [Thonneau, et al., 1993](#) or emergency peripartum (haemostatic) hysterectomy? [Mathlouthi, et al., 2012](#)
- Has the woman had a Pap smear in the last year? [Kelly-Weeder, et al., 2006](#)
- Has the man used finasteride for hyperplasia or male pattern baldness? [Samplaski, et al., 2013](#)
- Has the man ever taken estrogen drugs? [Sheiner, et al., 2003](#)
- Has the man or woman used opioids long-term for managing chronic pain? [Brennan, et al., 2013](#)
- Has the woman ever used thyroid preparations/medications? [Grodstein, et al., 1993](#); [Buck, et al., 1997](#)
- Did the woman use asthma medication before age 21? [Grodstein, et al., 1993](#)
- Does the woman take non-steroidal anti-inflammatory drugs? [Axmon, et al., 2006](#)
- Does the man or woman take antiretroviral medication for HIV? [Kushnir, et al., 2011](#); [Garolla, et al., 2013](#)
- Has the man or woman taken any of the other following prescription medications: Cimetidine (Tagamet), Ranitidine (Zantac), Allopurinol (Zyloprim, Aloprim), Sulfasalazine (Azulfidine), Nitrofurantoin, (Macrobid, Macrochantin, Furadantin), Spironolactone (Aldactone), Colchicine, Calcium channel blockers, Alpha blockers [e.g., Alfuzosin (Uroxatral), Doxazosin (Cardura), Prazosin (Minipress), Terazosin, Tamsulosin (Flomax)] (meds known to sometimes have subfertility/infertility side-effects)?
- Has the man or woman taken any of the following psychiatric medications: Valproic acid (VPA), Lithium, antidepressants [Grodstein, et al., 1993](#) - especially Tricyclic antidepressants [most common: Amitriptyline, Imipramine (Tofranil), Nortriptyline (Pamelor), Clomipramine (Anafranil), or Desipramine (Norpramin)] or antipsychotics [most common: Risperidone (Risperdal), Olanzapine (Zyprexa), Haloperidol (Haldol), Clozapine (Clozaril), Quetiapine (Seroquel)] (meds known to sometimes have subfertility/infertility side-effects)?
- Is the woman currently using tranquilizers [Grodstein, et al., 1993](#) barbiturates [Smith, 1983](#) - or other nervous system drugs? [Axmon, et al., 2006](#)

- Has the woman ever used tranquilizers for a period of more than 2 years? [Grodstein, et al., 1993](#) (see also [Smith, 1983](#))
- Has the man used tranquilizers or barbiturates? [Smith, 1983](#)

12. Genetic and congenital issues [4]

- Does the man or woman have certain genetic diseases, such as cystic fibrosis [Jarzabek, et al., 2004](#) Cushing's disease [Pickard, et al., 1990w](#) acromegaly [Unuane, et al., 2011](#) sickle cell disease [Berthaut, et al., 2008m](#) or inherited thrombophilia? [Fatini, et al., 2012](#)
- Does the man have any structural chromosome abnormalities [Amouri, et al., 2014](#) including but not limited to Klinefelter syndrome? [Amouri, et al., 2014](#)
- Does the woman have Turner Syndrome? [Karnis, 2012](#)
- Does the man have any of the following: undescended testicles (UDT/cryptorchidism) [Pasqualotto, et al., 2006](#); [van Brakel, et al., 2012](#); [Lee, et al., 2013](#) hypergonadotropism [Nalini, et al., 1992](#) congenital hypogonadotropic hypogonadism [Krausz, 2011](#) congenital absence of vas deferens [Krausz, 2011](#) testicular atrophy [Christman, et al., 2014](#) primitive [Krausz, 2011](#) or primary testicular failure? [Pasqualotto, et al., 2006](#); [Krausz, 2011](#)

13. Sexual experience [7]

- Has the man sought out illicit, risky sexual intercourse in the past? [Qin, et al., 2003](#)
- Has the woman had a high number of sexual partners? [Bahamondes, et al., 1994](#)
- Has there been a decrease in coital frequency between the couple? [Alvarez, et al., 2012](#); [Rothman, et al., 2013](#); [Perlis, et al., 2013](#)
- Is intercourse timed appropriately for conception? [Rothman, et al., 2013](#)
- Has the man or woman experienced a sexual disorder? [Schilling, et al., 2012](#)
- Does the woman experience sexual problems - e.g., insensitivity, bleeding or dyspareunia? [Alvarez, et al., 2012](#)
- Does the man experience ejaculatory dysfunction [Pasqualotto, et al., 2006](#) e.g., premature ejaculation or retrograde ejaculation?

14. Contraception and vaginal care [5]

- Did the couple delay or postpone childbearing till later years [Schmidt, et al., 2011](#) [te Velde, et al., 2012](#) using some form of birth control or contraception? [Zhang, et al., 2014](#)
- Has the woman taken oral contraceptives, in particular, prior to attempting to conceive [Axmon, et al., 2006](#) - especially long-term combined oral contraceptives (COC)? [Hassan, et al., 2004](#)
- Has the woman used any injectable contraceptives - especially for a longer period of time? [Hassan, et al., 2004](#)
- Has the woman used any nonhormonal birth control method [Rothman, et al., 2013](#) - including, but not limited to intrauterine devices (IUDs) [Hassan, et al., 2004](#) - especially the Dalkon Shield? [Buck, et al., 1997](#)
- Has the woman previously used condoms? [Kelly-Weeder, et al., 2006](#); [Kelly-Weeder, 2010](#)

15. Prior pregnancies [5]

- Did the man participate in a successful conception previously? [Povey, et al., 2012](#)
- Has the woman never had a baby? (nulliparity) [Thoma, et al., 2013](#) (see also parity [Axmon, et al., 2006](#))
- Did the woman's first pregnancy happen before the age of 21 years? [Dhont, et al., 2011](#)
- Does the woman have a history of unwanted pregnancy? [Dhont, et al., 2011](#)
- Has the woman experienced curettage during an abortion surgery? [Dhont, et al., 2011](#)
- Has the woman had a pregnancy with someone other than the current partner? [Dhont, et al., 2011](#)
- Has the woman had an adverse pregnancy outcome - including, but not limited to stillbirth [Dhont, et al., 2011](#) miscarriage or early pregnancy loss [Hassan, et al., 2005](#) or a past history of tubal or ectopic pregnancy? [Thonneau, et al., 1993](#); [Kelly-Weeder, et al., 2006](#); [Esmailzadeh, et al., 2012](#)
- Has the woman had deficient uterine scar healing after a previous cesarean section surgery? [Tower, et al., 2013](#)

16. Sexual risk [3]

--Does the woman have a current or past history of genital tract infection [Ikechebelu, et al., 2003](#) or sexually transmitted infections (STI) symptoms [Sami, et al., 2012](#) - including mycoplasma genitalium infection [Cazanave, et al., 2012](#) chlamydia trachomatis [Paavonen, et al., 1999](#); [Revonta, et al., 2010](#); [Kavanagh, et al., 2013](#) gonorrhoea or other sexually transmitted diseases? [Thonneau, et al., 1993](#)

--Does the man have a history of genital tract infection [Ikechebelu, et al., 2003](#) or sexually transmitted infections (STI)/sexually transmitted diseases (STDs) [Esimai, et al., 2002](#) - including chlamydia trachomatis [Gdoura, et al., 2001](#) gonorrhoea [Bayasgalan, et al., 2004](#) or other known infections in genital/reproductive areas? [Thonneau, et al., 1993](#)

--Has the man showed signs of any of the following viral infections: HIV [Dhont, et al., 2011](#) [Kushnir, et al., 2011](#) HBV [Deng, et al., 2003](#) HCV papillomaviruses (HPV) [Yang, et al., 2013](#) [Garolla, et al., 2013](#) herpesviruses (HSV) [Garolla, et al., 2013](#) herpes simplex virus type 2 (HSV-2) [Adamson, et al., 2011](#); [Dhont, et al., 2011](#) or cytomegalovirus (HCMV)? [Garolla, et al., 2013](#)

17. Other viruses, infections & inflammation [10]

--If the woman had previous birth experiences, did she incur any postpartum infections? [Dhont, et al., 2011](#)

--Does the woman have a history of salpingitis or pelvic inflammatory disease (PID)? [Thonneau, et al., 1993](#); [Akhter, et al., 2011](#)

--Is there any post-abortion infection [Hogue, 1986](#) or puerperal sepsis following miscarriage? [Araoye, 2003](#)

--Is there any known inflammation of the male accessory glands [Philippov, et al., 1998](#) - including inflammation of the prostate or seminal vesicles? (prostatitis, prostatovesiculitis) [Purvis, et al., 1993](#)

--Has ureaplasma urealyticum (Uu) been found in the male genital flora? [Purvis, et al., 1993](#); [Qin, et al., 2003](#)

--Has any of the following been found in the man's semen: anaerococcus bacteria [Hou, et al., 2013](#) or large numbers of white blood cells (pyospermia)? [Jarvi K, et al., 1994](#) [Pasqualotto, et al., 2006](#)

--Do either the man or woman have a known genital schistosomiasis parasitic infection from tainted water? [Owusu-Bempah, et al., 2013](#)

--Does the man have signs of JC polyomavirus infection [Comar, et al., 2012](#) or the adeno-associated virus (AAV)? [Erles, et al., 2001](#)

--Has the woman been exposed to sources of any other vaginal infection - including lack of prenatal care in the last pregnancy [Dhont, et al., 2011](#) a birth attendant who did not sufficiently wash hands at last pregnancy or inappropriate material to absorb blood during menstruation? [Sami, et al., 2012](#)

--Does the woman have treponema pallidum antibodies [Dhont, et al., 2011](#) or bacterial vaginosis (BV)? [Dhont, et al., 2011](#) [van Oostrum, et al., 2013](#)

18. Reproductive system blockage & damage [7]

--Does the man have any of the following conditions: varicocele [Thonneau, et al., 1993](#); [Philippov, et al., 1998](#); [Costabile, et al., 2001](#); [Pasqualotto, et al., 2006](#) epididymis [Bayasgalan, et al., 2004](#) testicular torsion [Pasqualotto, et al., 2006](#) seminal tract obstruction [Pasqualotto, et al., 2006](#) or obstruction from a previous vasectomy? [Costabile, et al., 2001](#)

--Does the man have oligozoospermia [Esimai, et al., 2002](#); [Ikechebelu, et al., 2003](#); [Elussein, et al., 2008](#); [Akhter, et al., 2011](#) asthenozoospermia [Ikechebelu, et al., 2003](#) [Elussein, et al., 2008](#) or azoospermia [Esimai, et al., 2002](#) - both obstructive [Philippov, et al., 1998](#) and nonobstructive? [Costabile, et al., 2001](#)

--Does the woman face fallopian tube blockage/obstruction [Akhter, et al., 2011](#); [Hu, et al., 2014](#) tubal occlusion [Ikechebelu, et al., 2003](#); [Akhter, et al., 2011](#); [Hu, et al., 2014](#) bilateral tubal block [Akhter, et al., 2011](#); tube abnormality [Hu, et al., 2014](#) or disturbances to tubal patency? [Philippov, et al., 1998](#)

--Has the woman experienced any known ovulation problems [Esmailzadeh, et al., 2012](#) - including anovulation [Akhter, et al., 2011](#) or failure of ovulation? [Elussein, et al., 2008](#)

--Does the woman have pelvic adhesions [Philippov, et al., 1998](#); [Hu, et al., 2014](#) - scar tissue associated with surgery or infection?

--Has the man had injury or damage to his testes in the past? [Bayasgalan, et al., 2004](#)

--Is there evidence for chemotherapy-induced ovarian failure in the young woman? [Turan, et al., 2014](#)

19. General gynecological, endocrine and hormone issues [15]

- Does the woman have a history of gynecological problems? [Kelly-Weeder, 2010](#); [Thoma, et al., 2013](#)
- Has the woman been diagnosed with endometriosis? [Akhter, et al., 2011](#)
- Does the woman often experience painful painful periods (dysmenorrhea)? [Alvarez, et al., 2012](#)
- Does the woman experience irregular menstrual cycles [Palihawadana, et al., 2012](#) or abnormal menstrual cycle lengths? [Axmon, et al., 2006](#)
- Are there any known hormone problems* or dysfunctions of the endocrine glands/system (endocrinopathies)? [Philippov, et al., 1998](#); [Pasqualotto, et al., 2006](#)
- Does the woman have any known thyroid disorders? [Poppe, et al., 2002](#)
- Does the woman have diabetes mellitus (DM) and hypothyroidism? [Tirosh, et al., 2013](#)
- Are there any known hypothalamic/pituitary problems, such as hyperprolactinemia [Luciano, 1999](#) or hypopituitarism [Milardi, et al., 2008](#) - in either the man or woman?
- Does the woman have any known issues with sex hormones, such polycystic ovary disease/syndrome (PCOS), a common endocrine disorder? [Akhter, et al., 2011](#); [Palihawadana, et al., 2012](#); [Sirmans, et al., 2014](#)
- After an early pregnancy loss, did the woman experience a placenta accreta (a severe obstetric complication involving an abnormally deep attachment of the placenta to the middle layer of the uterine wall without penetrating it)? [Confino, et al., 2014](#)
- Is the woman's LH:FSH ratio [Lutenizing Hormone/Follicle Stimulating Hormone] greater than 1? [Palihawadana, et al., 2012](#)
- Are there higher levels of circulating levels of antimüllerian hormone (AMH) in the woman? [Hagen, et al., 2012](#)
- Are there increased TSH or testosterone levels in the woman? [Palihawadana, et al., 2012](#)
- Are there lower testosterone levels in the man [Yang, et al., 2012](#) and/or a low testicular volume? [Bayasgalan, et al., 2004](#)
- Does the woman have one of the following: hirsutism (excessive hair on the body) [Palihawadana, et al., 2012](#) or acanthosis nigricans (a skin pigmentation disorder recognized by dark patches of skin with a thick, velvety texture on various parts of the body)? [Palihawadana, et al., 2012](#)

20. Cysts, tumors, cancer & other illnesses [12]

- Does the woman have overall good health [Kelly-Weeder, 2010](#) - with less disease overall [Revonta, et al., 2010](#) and not experiencing any serious, long-term health problems? [Esmailzadeh, et al., 2012](#)
- Has the man ever experienced mumps orchitis [Bayasgalan, et al., 2004](#); [Pasqualotto, et al., 2006](#) or another type of orchitis? [Bayasgalan, et al., 2004](#)
- Is the woman's body showing signs of significant oxidative stress (OS) - an imbalance between pro-oxidants and antioxidant defenses? [Agarwal, et al., 2012](#)
- Does the woman have some kind of intestinal disease? [Revonta, et al., 2010](#)
- Has the woman been diagnosed with coeliac/ceeliac disease? [Stazi, et al., 2000](#); [Soni, et al., 2010](#)
- Has the woman been diagnosed with another auto-immune disease, such as Graves' disease (GD) or Hashimoto's thyroiditis (HT)? [Quintino-Moro, et al., 2014](#)
- Does the man have allergies? [Revonta, et al., 2010](#)
- Does the man have osteopenia or lower than normal bone mineral density (BMD), as reflected in lower lumbar spine and total hip bone scores? [Yang, et al., 2012](#); [Kacker, et al., 2014](#)
- Does the man or woman have any known abnormal mass of tissue or (genitourinary) neoplasm in the reproductive or urinary systems? [Leke, et al., 1993](#)
- Does the woman have any non-cancerous/benign uterine tumors [Revonta, et al., 2010](#) such as a fibroid uterus or uterine fibroids (leiomyomata)? [Akhter, et al., 2011](#)
- Does the man have testicular cancer? [Pasqualotto, et al., 2006](#); [Garolla, et al., 2012](#); [Serrano, et al., 2013](#)
- If diagnosed with Hodgkin lymphoma, was the woman older at the time? [Falorio, et al., 2013](#)

Open ended questions:

- Is there any other area not identified in this inventory that you sense may be a factor in your own situation?
- Of all the areas explored, which ones do your own intuition or 'gut' say might be the most important for you?
- Are you taking away any insights on possible lifestyle adjustments or bigger changes that could make a difference?

Next steps? Once you self-score the inventory above, you can get a sense of individual factors that may increase the likelihood of fertility (and decrease vulnerability to infertility) in your own circumstances. No single factor, of course, should be held responsible. Instead, the entire array of factors works together in a "cumulative risk burden" on individuals or couples: As de Vocht, et al., 2012 writes, "Predisposition to a disease is usually caused by cumulative effects of a multitude of exposures and lifestyle factors in combination with individual susceptibility." Another research team discovered that couples who had more than 4 negative lifestyle variables had: "a sevenfold longer TTP (time to pregnancy), their conception probabilities fell by 60%, and they were 7.3-fold more likely to be subfecund than those without negative variables." They concluded that "Lifestyle has a significant and cumulative impact on fecundity" Hassan, et al., 2004.

If it's true that different vulnerabilities "gang up" on us - then perhaps the reverse is true: that a set of protective factors could "team up" and begin to gain a positive momentum over time. In one study, for instance, women who were in the "high-fecundability categories for three lifestyle factors had an estimated probability of conceiving of 88%." Despite being older (a known risk factor), these women found that a combination of certain lifestyle adjustments could together, "offset some of the age-related decline in fecundability." The researchers summarized, "At age 40 years, a couple's fecundability would be approximately half of what it was at age 30 years, but some of this decline can be counteracted by volitional factors affecting conception" Rothman, et al., 2013.

As couples understand the unique set of vulnerabilities at play in their own life experience, they can then go on to create a personalized plan to help decrease risk factors over time - and increase the likelihood of conception. [Credit to Mary Ellen Copeland for her pioneering work in this regard: Copeland, M. E. (1997). *Wellness recovery action plan*. Peach Press]. The growing momentum behind this approach is evident in researcher and professional statements below - organized historically by earliest to latest:

- "Crucial decisions about...life-style choices have a far-reaching impact on reproductive potential." Keating, et al., 1992
- "These results underline the importance for physicians of making a systematic exploration for all the different infertility risk factors in men and women, enabling greater control and effectiveness in medical diagnosis." Thonneau, et al., 1993
- "Clearly, there is a need for early education on the value of health promotion and prevention in relation to the management of infertility." Olatunbosun, et al., 1997
- As our knowledge continues to grow of "behavioral threats to fertility," professionals "will be in a better position to screen and assist women [and men] to modify their fertility risks." Kelly-Weeder, et al., 2006
- "Major medical organizations are now making suggestions for "optimizing natural fertility." American Society for Reproductive Medicine, et al., 2008
- "Modifiable lifestyle factors exist that may affect a person's time to conception and their chance of having a healthy, live birth." When couples seek medical help, "advice on modifiable lifestyle factors should be given" to both the man and woman, "to help them make positive changes that may improve their chances of pregnancy and delivering a healthy, live baby." Anderson, et al., 2010
- "Clinical infertility is a prevalent problem with significant financial and psychosocial costs. Modifiable lifestyle factors exist that may affect a person's time to conception and their chance of having a healthy, live birth. Advice on modifiable lifestyle factors should be given to people presenting for infertility treatment to help them make positive changes that may improve their chances of pregnancy and delivering a healthy, live baby." Anderson, et al., 2010
- "There are numerous toxic and environmental factors which are potentially harmful for a couple's fertility and which should be corrected before any medically assisted procreation (MAP) is attempted in order to optimise the results in ART and to increase natural fertility." Alvarez, et al., 2012
- "For the prevention of behaviour-related fertility disorders, it is important to inform the population about lifestyle-mediated fertility risks." Schilling, et al., 2012
- Studies are underway "to determine whether providing infertile couples with individualized lifestyle assessments and ongoing support facilitates positive lifestyle changes enhancing healthy fertility." Homan, et al., 2012
- There is a need for "public health campaigns to increase awareness of the risk factors associated with reduced fertility." Boivin, et al., 2013