PRECONCEPTION HEALTH CARE

SELF-HELP GUIDE

Written for Fertility New Zealand
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www.mother-well.co.nz
WHY ‘PRECONCEPTION CARE’?

The combined evidence of many eminent researchers shows that conditions such as Subfertility, Miscarriage, Low birth weight, Premature birth, Malformation, Breast-feeding difficulties, Hyperactivity, Learning problems, Asthma, Eczema, and Poor resistance to infection are often preventable.

Preconception Care can certainly help couples experiencing fertility issues or recurrent miscarriages. There is a premise that a healthy body is a fertile body. Therefore, by aiming to have both prospective parents be as healthy as they can prior to conception attempts, often the issues that have resulted in infertility are resolved and a healthy conception can occur. Preconception care is not just for optimizing conception, but also to ensure a healthy pregnancy and healthy baby who grows up into a healthy individual able to meet all his/her potentials in life.

How?

By attending to the health and lifestyle of both prospective parents before they conceive a child.

Ova are susceptible to damage for 100 days before ovulation and sperm formation takes approximately 116 days. Then from conception to 12 weeks gestation, the fetal mass increases over 2½ million times, but from 12 weeks to full term only increases a mere 230 times. By the time a woman realises that she is pregnant and decides to modify her diet and lifestyle, the early weeks, when cell organisation, differentiation, and organogenesis occur, are almost over. By the end of this period, those anomalies that are going to affect the fetus are already present.

Preconception care therefore aims to ensure that there is an adequate supply of all those nutritional factors which are essential for the health of the sperm, ova and fetus and an absence of those factors which are known to compromise general health, or which are harmful to germ cells, or to fetal development.

The pre-pregnancy preparation for both prospective parents is recommended for a minimum period of four months before an intended conception. Some issues a couple can address for themselves, others will require help from a trained practitioner, and include:

- Avoiding everyday environmental hazards
- Improving nutrition
- Treating food and chemical allergies
- Discouraging uses of common social poisons (e.g. Cigarettes, alcohol, and drugs including caffeine).
- Screening for essential trace elements (e.g. Zinc and iron) and toxic metals (e.g. Lead and cadmium)
- Treating infection, especially that of genitourinary type
• Screening for sub clinical medical conditions e.g blood clotting factors, immunological imbalances, thyroid dysfunction) etc
• Using natural family planning (avoiding oral contraceptives, IUDs) – understanding optimal timing for conception by recognizing fertile signs e.g mucus and temperatures
• Dealing with any physical, emotional and mental stress

**The Result**

With attention to all of the foregoing, there is a higher possibility of having a stress free and healthy pregnancy, followed by an easy labour without intervention or drugs, a successful breastfeeding relationship or gentle weaning on to a whole food diet, and of course an exceptionally healthy, happy and bright child who will be a joy to care for and who will have an excellent chance of realising her/his full genetic potential.

**How effective is ‘Preconception Care’?**

The Foresight Study.

The Foresight Association (British Association for the promotion of preconception care) was established in the UK in 1978. Their clinics have fifteen years of practical experience and the most recent study conducted by Foresight in conjunction with Surrey University followed the progress of 367 couples. The women ranged in age from 22 – 45 years, the men from 25 – 59 years.

Upon coming to Foresight . . .

41% of the couples had no previous adverse reproductive history, but among these were the older couples. The remainder had suffered infertility, previous miscarriage, therapeutic abortion, stillbirth, ‘small for dates’ or low birth weight babies and malformation.

By the end of the Study . . .

• 89% of all the couples had given birth including 81% of those who were infertile. The average gestational age was 38.5 weeks and no baby was born before 36 weeks.
• Average weight of males was 7lb. 4 ½ oz (3299 g)
• Average weight of females was 7lb. 2oz (3238g)
• And no baby was lighter than 5lb. 3oz (2368g)
• There were no miscarriages, no perinatal deaths and no malformations! No baby was admitted to Intensive Care!
A full copy of this research document as well as details of other Foresight publications, may be obtained by writing to:

Janette Roberts B. Pharm (Hons)
Secretary Foresight (Australia)
124 Louisa Road
Birchgrove NSW 2041
Australia.

or visit Foresight

University of New England:

The University of New England is in the process of conducting a study on 67 patients on the Natural Fertility Management conception programme. Pilot research is being carried out by Susan Arentz, BHSc (HONS), ND, Dip hom. A high number of the couples in this study had serious fertility problems, all of them diagnosed infertile, and 25% of them were over 40yr old. Preliminary results have shown 52% of previously infertile couples can conceive within the first four months following their participation in the program.
DIET GUIDELINES FOR OPTIMUM REPRODUCTIVE HEALTH

or preconception and pregnancy

ALL FOODS TO BE FRESH AND ORGANICALLY GROWN/FED WHENEVER POSSIBLE

(Higher in nutritional value, lower in toxins). Individuals may have additional or different dietary needs

PROTEIN

You need an average sized serving (equivalent to the palm of your hand) of protein-providing food at least 2 x a day before conception and 3 x a day during pregnancy. This should be food giving you either:

1. A primary protein, which comes from an animal source, and is a complete protein (i.e. one which contains all the amino acids)

2. A combination of secondary proteins, which come from a plant source, and are incomplete proteins (i.e. they do not contain the full range of amino acids).

By combining two of the food groups below (within one meal or one day), you will have a complete protein source, as each group has a different range. This is not necessary if you are also eating any foods of animal origin.

1. Nuts
2. Grains/seeds
3. Legumes/pulses

FATS

You need to avoid saturated fats, which will upset your prostaglandin / hormone / nutrient balance. This means heated and animal fats.

NO FRIED FOOD except stir fry. Cook with minimal amount of olive oil (or sesame if using very high heat). These are mono-unsaturated fats, and will not saturate on heating.

USE LOTS OF COLD PRESSSED OILS ON SALADS (extra virgin olive or flaxseed). These oils are high in beneficial essential fatty acids if never heated. They can be poured over food after cooking, and used on bread as a butter substitute. They should be kept out of light (in dark containers) and in the fridge (except olive). Add lemon/pepper-garlic/herbs to dressing.

AVOID BUTTER/MARGARINE. These are both saturated fats. Margarine is even worse than butter, as it saturates during processing and is also full of chemicals. Try avocado, banana, hummus, tahini, nut spreads (if fresh & refrigerated and kept away from light). “Nutella” is full of sugar and peanut butter is very fatty (peanuts are legumes, not nuts).

* Prospective mothers should avoid unpasteurised goats’ milk products or heat milk to 70° for 30 seconds.

PROTEIN PROVIDING FOODS

FISH – 3 times weekly. Low in saturated fats, high in essential fatty acids, especially deep sea/ocean/cold water fish, which are also less polluted - e.g. mackerel, mullet, taylor, trevaly & sardines. Avoid large fish e.g. tuna, shark (flake) stingray, barramundi, gem fish, orange roughy (deep sea perch), ling, king mackerel & swordfish (too high in mercury), crustaceans (often polluted) and raw fish (may contain bacteria). Fresh definitely preferable to tinned/frozen. Wild preferable to farmed.

POULTRY – Trim the skin to avoid fats. Use certified organically fed only (free range is not necessarily organic and may still be fed with hormones and/or antibiotics).

EGGS – ARE AN EXCELLENT SOURCE OF PROTEIN. Limit their consumption only if they cause gastro-intestinal problems such as gas or constipation or other allergy symptoms. Certified organically fed (see above).

DAIRY – avoid/minimise cows’ milk / cheese, as it is linked to endometriosis, malabsorption, can create mucus in tubes. Natural cultured non-flavoured yoghurt is good (unless hypersensitive to cows’ milk). Goats’ or sheep’s milk/cheese preferred (*). Rice and oat milk also OK though not high in protein. Soy milk cheese not recommended (especially avoid genetically engineered or high fat/aluminum/sugar brands of soy). Avoid soft cheeses which may contain bacteria.

RED MEAT – IN MODERATION. Unless certified organically fed, avoid organ meats / offal / sausage / mince (or get the butcher to mince on site). Organ meats contain high levels of toxins eg pesticides / hormones. Avoid delicatessen meats (high in fats, offal content and toxic preservatives) and raw/undercooked meat. Trim all fat.

LEGUMES / PULSES – Split peas, lentils, chickpeas, beans, soy. (Fermented forms of soy eg tempeh, miso preferred, to avoid problems with protein and mineral absorption). Good plant protein (also contain carbohydrate). Must combine as shown. Good detoxifiers.

NUTS/SEEDS - raw / unsalted / fresh (store in fridge, away from light and eat within 2 weeks or freeze. Nuts should not taste bitter). Use in stir fries, salads, as a snack. No dried fruit (high in sugar, and either preservatives or mould).

GRAINS – see over for grains (which have higher carbohydrate content than protein).
CARBOHYDRATES
Keep consumption to moderate levels and choose low glycaemic carbohydrates where possible (most non starchy vegetables, pulses, whole (not refined) grains). High glycaemic foods (eg sugar, white/refined grains) can disrupt hormones. Refined carbohydrates also leach nutrients from your body’s stores which, in turn increases your desire for these foods. The balance of protein to carbohydrate foods should be approximately 1:1 in volume, though you can eat as much non starchy vegetables as you like.

VEGETABLES – lots every day. Should make up minimum 40% of total food intake. Organic whenever possible. Wide variety especially dark green leafy / red and orange / avocado. Eat both raw and cooked regularly.

Raw  
Juices – try carrot/celery/beetroot as a base (great way of ensuring adequate vegetable intake).
Salads – use a wide variety of vegetables. Pale lettuce is not highly nutritious. Add chopped fresh herbs e.g. parsley and watercress. Potatoes must not be eaten raw. Avoid pre-prepared salads (which may contain bacteria in the dressings).

Cooked  
Steamed / stir fried / dry baked. Root vegetables require light cooking / grating / juicing for absorption. Discard green potatoes (toxic), and cut out the “eyes” or “scabs” on all root vegetables (can adversely affect foetus).

Fruit  
2 – 3 pieces daily, maximum (because of high sugar content). This includes fruit that is juiced (dilute 50/50) though better eaten whole. No dried fruit. Organic and low glycaemic whenever possible.

Grains  
Whole grain bread/rice/pasta/pastry only and organic whenever possible. Green pasta may be white with dye added. Avoid refined flour products. Read bread packets carefully and avoid those containing preservatives/additives. Grains provide limited protein compared to their carbohydrate content.

SUGAR  
Avoid all sweet things (includes honey, sugar substitutes, undiluted fruit juice, cakes, biscuits, soft drinks and all additives ending in “-ose”, eg sucrose, fructose, glucose, maltose etc)

ALCOHOL  
Avoid. Foetal alcohol syndrome is traced to preconception, with both parents. Alcohol is toxic to the foetus and leaches nutrients.

BEVERAGES

COFFEE  
Avoid. Related to fertility/pregnancy/foetal health problems, including miscarriage. Decaffeinated not recommended. Cereal based substitutes and Dandelion Root OK (check for added sugar).
TEA  2 CUPS WEAK, NATURALLY LOW CAFFEINE (NOT DECAFFEINATED) at most DAILY. Green and herb teas preferred and unlimited.

WATER  8 – 12 GLASSES PURIFIED WATER DAILY (OR BOTTLED). Mineral water OK occasionally. Unpurified tap water can be high in many toxins and heavy metals which are concentrated, not destroyed, by boiling. Do not store in plastic.

SPICES/CONDIMENTS – Do not routinely add salt to your cooking/meals. If necessary, use sea/rock salt (to taste) on individual foods, sparingly. Pepper and spices are OK (unless you are sensitive to them). Avoid any sauces containing sugars/salt/additives.

ACID/ALKALI balance should be OK if you eat lots of vegetables and only moderate amounts of animal products and grains.

PHYTO-OESTROGENS If suffering from endometriosis, fibroids or hormonal imbalance, eat regular, moderate amounts of phyto-oestrogenic foods, eg soy (fermented forms preferred) / parsley / cucumber / whole grains and seeds / alfalfa / fennel.

‘JUNK’ FOODS – Avoid fats / sugars / salt / additives. Read labels carefully.

CIGARETTE SMOKING is harmful to your (and your baby’s) health.

COOKING & STORING – Do not overcook or use microwave ovens for cooking or defrosting. Avoid soft plastic containers and cling wrap, as they leach oestrogen mimics into your food. Use stainless steel cookware.

FOR HELPFUL HINTS ON CHANGING FOOD HABITS – Get rid of all your unhealthy foods. Fill your cupboards with nutritious, delicious foods, especially for snacks – to prevent the sugar/carbohydrate “quick fix”. Use your 2-3 pieces of fruit to substitute for other sugary foods you may be used to eating.

EXERCISE – a varied programme of regular low impact aerobic exercise minimum 30 minutes 3 – 4 times/week. Rebounding particularly beneficial for health or reproductive organs. Yoga/pilates is also excellent for all aspects of reproductive health.

TO HELP MAKE POSITIVE CHOICES – TRY AN AFFIRMATION SUCH AS “I AM MAKING A POSITIVE CHOICE FOR MY HEALTH AND WELL BEING (AND THAT OF MY CHILD)”
EWG’s SHOPPER’S GUDE TO PESTICIDES

Eat your fruits and vegetables! The health benefits of a diet rich in fruits and vegetables outweigh the risks of pesticide exposure. Use EWG’s Shopper’s Guide to Pesticides to reduce your exposures as much as possible, but eating conventionally-grown produce is far better than not eating fruits and vegetables at all. The Shopper’s Guide will help you determine which fruits and vegetables have the most pesticide residues and so are the most important to buy organic. You can lower your pesticide consumption by nearly four-fifths by avoiding the 12 most contaminated fruits and vegetables and instead eating the least contaminated produce, according to EWG calculations.

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ALCOHOL

In 1973 fetal alcohol syndrome (FAS) was defined by a group of researchers in USA. It has now been defined by international research and the full abnormalities are accepted to be: underweight and under length at birth; slow growth and failure to thrive after birth even with special postnatal care; unusually small head with defective development of mid-facial tissues; joint and limb abnormalities; possible mental retardation and/or behavioural problems such as hyperactivity and extreme nervousness.

Alcohol crosses the placenta freely and travels through the baby’s bloodstream in the same concentration as that present in the mother’s.

In the National Council of Women’s Report, 1976, which provided this information, Dr. David Woollams of Cambridge, and Dr. Richard Bast of the NIAAA of USA both stated that the only safe limit for pregnancy was no alcohol.

Since then, Dr. Anne Streissguth of Washington has described the condition Fetal Alcohol Effect (FAE). This term is given to babies less impaired than those with FAS, but whose intelligence, behaviour and growth have been significantly retarded by parental alcohol consumption. Seven year olds whose mothers had one drink daily during pregnancy were found to have a 7 point IQ deficit. Dr. Streissguth followed affected babies through to adulthood, and found that problems were compounded rather than resolved as they grew older.

A number of reports have demonstrated that alcohol can be particularly harmful to men and women before conception (damage to sperm and ova), and to women and unborn children during the first 4 - 5 months of pregnancy.

In 1983, Dr Matthew Kaufman of Cambridge drew attention to the dangers of “a single episode of heavy drinking in the mother at about the time of conception”. Alcohol given to female mice immediately after mating caused severe damage to the chromosomes of one fifth to one sixth of the eggs. This could result in spontaneous abortion, or death shortly after birth. Much abnormality in human young can be traced back to chromosomal abnormalities.

Mace et al. 1981, concluded that the highest rate of fetal death or malformation resulted from alcohol consumption by the female rat in the period immediately before ovulation (equivalent to 36 hours before ovulation in the human). In rats given alcohol at different times before ovulation fertility was greatly reduced and in the young there was an increase in death and malformation, also reduced weight, size and length of limb in survivors. An increase in embryonic mortality was also found where alcohol was given after mating.
In a study report in “Nature” 1975, alcohol given to male mice just before mating was not found to be visibly affecting offspring, but alcohol given 4 to 13 days before mating caused genetic damage and a high rate of mortality in the young.

The mature sperm appear less vulnerable to alcohol than the developing sperm. Male mice were given alcohol on 3 successive days; the blood concentration, in human terms, would have been around the legal limit for drivers. Similar effects of alcohol on sperm development have found that mature sperm are less vulnerable than sperm during their development. Spermatogenesis (sperm development) in the human male takes 116 days.

In conclusion, if some effect is demonstrated to be dangerous in animals, it may well be dangerous in humans. For total safety and optimum development in the child, we advocate a complete avoidance of alcohol for both parents in the four months leading up to the intended conception, and for the mother throughout pregnancy and breastfeeding.
SMOKING

In 1980 the report of the USA Surgeon-General “The Health Consequences of Smoking for Women” demonstrated that smoking is a major cause of abnormal pregnancies, and avoidable illness and deformity in children.

In 1957 Simpson reported that babies born to smokers were on average 200gms lighter. 45 studies have confirmed that smoking is a major cause of low birth weight. Smokers have nearly twice the risk of spontaneous abortion and the risks of pre maturity rise with the number of cigarettes smoked from 6% for non smokers, through 11% for smokers who use 10 cigarettes a day, to 33% where others smoke 30 per day.

The neo natal death rate also rises directly with the number of cigarettes smoked. Smoker’s placentas tend to be thinner and most of the excess deaths are due to placental hemorrhages causing premature delivery.

Studies have found that smokers are more likely to have live babies with all types of congenital abnormalities, especially cleft palate, and central nervous system abnormalities. The risk is more than doubled in heavy smokers. Long term studies have shown reduced growth, learning difficulties, neurological abnormalities and abnormal EEGs, which mean epilepsy and/or hyperactivity. Passive smoking by the baby after birth increases the risk of cot death, hyperactivity and asthma.

Children of heavily smoking fathers are more than twice as likely to have malformations. In men, smoking levels affect spermatogenesis (sperm development), sperm morphology and motility. Studies have shown that numbers of damaged sperm, also the number of children born with a malformation, rise directly in line with the number of cigarettes smoked per day.

In research sponsored by the Teratology Committee of the German Research Council it was found that not only serious congenital but also perinatal mortality was significantly higher among the babies of smoking fathers, after correcting for the effects of pregnancy outcome of mothers’ smoking and the possible effects of eleven other factors. When even 10 cigarettes were smoked, the chances of malformation were increased by over 2.5 times.

Even after birth, additional health problems burden smokers’ children. A report by the Royal College of Physicians in 1992 said that children whose parents or carers smoke may inhale the equivalent of 60-150 cigarettes a year and are more than likely to have glue ear and twice as likely to have breathing infections.
CAN STRESS CAUSE INFERTILITY?

More and more research seems to confirm a link between stress, anxiety, depression, and infertility, says Alice Domar, PhD, executive director of the Domar Center for Mind/Body Health at Boston IVF.

First, when you're stressed out, you're probably not having sex as often -- a pretty obvious fertility derailment. "You're also more likely to smoke and binge drink," says Dr. Domar, both of which have been known to negatively impact conception.

For some women, chronic stress can affect ovulation by altering signals to the hypothalamus, the center of the brain that regulates some of the hormones that trigger the ovaries to release eggs each month. Women under nonstop stress may ovulate less regularly, making it more difficult to plan baby making for the exact window when they're most fertile. Some research shows that stress may also affect testosterone levels and sperm production in men.

Other research indicates that stress may have an impact on other aspects of fertility beyond ovulation, including problems with fertilization and implantation in the uterus. One study from the University of California San Diego found that the most stressed women undergoing IVF had less success every step of the way (fewer eggs retrieved and fewer eggs successfully implanted) compared to women who were not as tense. Another study from Israeli researchers tested whether helping women de-stress while undergoing IVF could impact the success rate. They found that women who were entertained by a clown after they received the treatment (laughter is a known stress-soother) were more likely to conceive than those who were not.

What we do know now is that when stress reduction techniques are employed, something happens in some couples that allows them to get pregnant, when they couldn't get pregnant before," says Allen Morgan, MD, director of Shore Institute for Reproductive Medicine in Lakewood, New Jersey. Some stress reduction techniques include hypnotherapy, counselling, meditation, yoga and exercise.
REDUCING CHEMICAL EXPOSURE

Some exposures to pesticides and industrial chemicals are unavoidable. Many everyday items found around our homes can emit chemicals, that when combined together, create a toxic cocktail inside our homes and bodies. The increasing prevalence of many modern day illnesses and allergies is being linked to chemicals that we are exposed to in our homes.

It is now widely recognized that babies and young children are at greatest risk from chemical exposure, which can have lifelong impacts on their health and ability to learn. If you are pregnant, planning to become pregnant, are breastfeeding or have young children, it is advisable to pay particular attention to reducing chemical exposure as much as possible. Here is a ‘starter-list’ of practical measures you can take to protect yourself and your children from common chemicals:

- Store your food in glass containers whenever possible, as it is the most inert container you can use. Don’t microwave in plastic or with Gladwrap, use glass or ceramic instead. It is especially important to look for BPA-free bottles for your infants and BPA-free water bottles for your children and yourself.

- Buy and eat organic produce and free-range, organic foods where possible, to reduce your exposure to pesticides, GMOs and fertilizers. This especially applies to animal produce (meat, chicken, eggs) and full-cream dairy products, as these may contain higher levels of some pollutants. If you don’t have access to organic produce, consider eating fewer meat and high-fat dairy products. In addition see the ‘Clean Fifteen’ Vegetable and Fruit List.

- Avoid the use of pesticides in the home or garden, or on your family pets. Examples of common things to avoid: Mortein, garden sprays, flea treatments, mosquito repellants that contain Deet etc. There are safe, effective and natural alternatives out there.

- Eat low-mercury fish. Avoid large fish e.g tuna, shark, swordfish, orange roughy, king mackerel, crustaceans (often polluted) and raw fish (may contain bacteria). Fresh definitely preferable to tinned/frozen. Wild preferable to farmed. Avoid seafood that may be high in other environmental contaminants such as PCB levels. Locally caught fish, prawns, and crustaceans from inlets, lakes, rivers and harbours may be contaminated with PCB’s, so always check with your local fishing authority before eating.

- Say ‘No’ to mercury amalgams.
• Throw out your Teflon pots and pans and instead use safer cooking materials like ceramic, stainless steel and glass

• Avoid processed foods and become a food label detective. Avoid artificial food additives of all kinds, including MSG and artificial sweeteners. Artificial sweeteners are found in most chewing gums, diet foods and drinks, and some children’s medications.

• Run your tap water through a home-filter, or drink spring water. Filters can reduce levels of common tap water pollutants.

• Avoid artificial fragrances: in air fresheners, fabric softeners, perfumes, cheap candles, and other synthetic fragrances. Use fresh flowers, essential oils and natural alternatives instead.

• Reduce the number of cosmetics and other personal care products you use, which can contain harmful chemicals and can be sold with no safety testing. Aim to switch to natural brands of personal care items: including shampoo, toothpaste, deodorants and cosmetics. Skin care products are notorious for containing many dangerous chemicals. See the Environmental Working Group’s Skin Deep Cosmetic Safety Database [www.cosmeticsdatabase.com](http://www.cosmeticsdatabase.com) or ONE Groups’ Chemical Directory [www.mionegroup.com/toxic](http://www.mionegroup.com/toxic) for more information

• Avoid nail polishes and nail polish removers; aerosols like hairspray, conventional hair dyes and bleaches while pregnant and breastfeeding.

• Carefully consider what you put on your baby’s skin: be cautious of ingredients such as preservatives, parabens, foaming agents, fragrances and petroleum based ointments.

• Carefully consider the toys you choose for your children, as children like to ‘mouth’ things. Avoid toys that have been painted overseas, plastics, adhesives, lip-glosses, nail polishes etc

• When renovating your home, look for ‘green’ toxin-free alternatives in lieu of regular paints, varnishes and floor coverings. Use low VOC (volatile organic compound) paints, varnishes and sealants (available from your hardware store) and avoid formaldehyde resins. Ideally aim to finish the renovations, polish the floor boards, and paint the baby room well in before you conceive. See [www.safersolutions.org.au](http://www.safersolutions.org.au) for more advice on healthy home renovations.
• Reduce the number of household cleaners you use and only use natural cleaning products in your home. Most health food stores and many supermarkets will have these available.

VULNERABILITY OF CHILDREN TO POLLUTION

Children are more vulnerable due to both rapid development and incomplete defense systems:

• A developing child’s chemical exposures are greater kilo-for-kilo than those of adults
• An immature, porous blood-brain barrier allows greater chemical exposures to the developing brain
• Children have lower levels of some chemical-binding proteins, allowing more of a chemical to reach ‘target organs’
• A baby’s organs and systems are rapidly developing, and thus are often more vulnerable to damage from chemical exposures
• Systems that detoxify and excrete industrial chemicals are not fully developed
• The longer future life span of a child compared to an adult adds more time for adverse effects to arise

(Environmental Working Group 2005)
RADIATION

Radiation exposure is becoming difficult to avoid. However, there is increasing evidence that it can lead to damage to DNA, broken or misshapen chromosomes, mutated genes and early cell death, that it adversely affects the egg, sperm and embryo, and is implicated in fertility problems, miscarriage and birth defects. Some defects previously attributed to age may well be due to the accumulated effects of radiation (or other toxic substances), which increase with age. During the preconception period and pregnancy (especially the first trimester) both prospective parents need to put in place as many of the following guidelines as possible.

RADIATION PROTECTION FOR FLYING

(One 4 hour high altitude flight has the equivalent radiation exposure of a chest X-ray)

Only fly if absolutely necessary. Seek alternatives whenever possible.

Sit away from the window. This may lessen exposure to some degree.

Take homeopathic, nutritional and herbal radiation remedies.

Use Epsom salts or lead to protect your lower body. Cushion cover filled with Epsom salts, or lead impregnated vinyl, can be placed over the reproductive organs.

RADIATION PROTECTION FOR MOBILE AND CORDLESS PHONE USERS

Use your mobile phone as little as possible.

Keep your mobile phone switched off when not in use. Remember it attracts radiation even when you are not making a call.

When switched on, keep your mobile phone AWAY (at least one metre) from your lower body. Although there are health concerns for all parts of your body, your eggs, sperm and embryo are particularly vulnerable.

Use of ‘hands free’ kit – these kits may actually increase radiation to your head if they use a wire connection. We recommend a wireless, air filled tube connection. Car kits are also recommended if fitted with an external aerial.
RADIATION PROTECTION FOR COMPUTER USERS

Turn off your computer (or at least the monitor) whenever possible or take regular breaks.

Maximize the distance between yourself and the monitor when not in use. Remember radiation is emitted from the back and sides of your, as well as other worker’s monitors. Also ensure your CPU is at least 50cm away from your body.

Minimise use of laptop computers. When operating on electricity, laptops emit very high electric fields from the keyboard area (in contrast to their screens, which are very good). Use on battery whenever possible, which will minimize EMP.

Place a container of Epsom salts or some lead between yourself and the monitor. Epsom salts absorb some forms of radiation. The crystals break down and will need to be replaced periodically. They can be placed in a cushion to cover your lap (and your reproductive organs). Bathing in Epsom salts can assist your body to release accumulated radiation. Lead based vinyl ‘pelvic aprons’ can also be used.

There are also various devices available that protect against electro-magnetic fields. A grounded computer mouse pad will significantly reduce fields that are induced into the body. Also shielding devices are available that can be either worn or placed on the computer or other electrical items.

Grow plants in the immediate vicinity of the computer. Cactus plants (Cerus Peruvianus), between 20-60cm tall, have been shown to be effective in absorbing radiation. In addition peace lilies, spider plants and sunflowers are also considered helpful for office environments.

AVOIDANCE OF HOUSEHOLD ELECTROMAGNETIC RADIATION

Consider moving if you live (or work) near a transmitter, electricity sub station or high voltage power lines.

Move your bed well away from a fuse box. Also check that the external walls of your bedroom do not house an electric water heater or air conditioning unit.

Make sure there is no TV/refrigerator/stereo (or other electrical appliances) on the other side of the wall from your bed.
Inactivate all electrical appliances in your bedroom while you sleep.

Make sure electric blankets and waterbeds are unplugged (not just turned off) whilst you sleep. These directly induce voltage into your body and have been shown to cause fertility problems and miscarriages as well as other serious health conditions. Install a Circuit Disconnect Switch. This switch eliminates electric fields from your sleeping area. When using one of these, there is no need to switch off or unplug appliances within the protected area. They are also highly recommended in children’s bedrooms.

Turn off all appliances with a pilot light at the ‘power point’. Appliances in ‘standby mode’ still draw current.

Replace your clock radio with a battery clock.

Stand or sit at least an arm’s length away from electrical appliances being used elsewhere in the house.
THE MALE FACTOR

Men are half the baby but rarely get half the attention, both clinically and in published studies.

Most studies make the assumption that a man’s fertility potential is unchanged through his lifetime, provided the sperm can get into the egg, and treat conception as a woman-dependent process as opposed to a couple-dependent process. Here are a few studies that do show the importance of the male factor in fertility.

AGE

Incidence of Down’s Syndrome is related to paternal age as well as maternal age. (Fisch, Hydn et al 2003)

A man’s age, as well as a woman’s impacts on the risk of miscarriage (de la Rochebrochard, Thomas 2002)

Increasing paternal age, which is associated with increasing sperm DNA damage, is also associated with increased congenital anomalies (Tiemann-Boege et al, 2002)

Likelihood of conception following IVF is halved for women 38-40yrs, if their partner is aged 40 yrs or older. (Rochebrochard et al, 2006)

OVERWEIGHT

One in two men underestimate ‘overweight’. If overweight, there is a 2 fold increase in fertility problems and threefold increase in erectile dysfunction. Increased weight is also associated with poorer nutrition which impacts fertility.

SMOKING

Active and passive smoking harms sexual and reproductive health throughout reproductive life in both men and women. (British Medical Assoc 2004).

A child born to a male smoker is 4 x more likely to develop cancer in childhood.
DRINKING

In men, alcohol consumption can induce testicular atrophy, a reduction in sperm count, increased miscarriage rate, lower live birth rates, reduced libido and impotence. (Anderson et al 2010)

NUTRITIONAL DEFICIENCIES

59% of all men visiting a fertility clinic were found to have nutritional deficiencies and/or raised homocysteine levels.

Folic acid deficient  18%
Vitamin D deficient  29%
Raised homocysteine  30%

53% of men had abnormal levels of sperm DNA, particularly if aged >40yrs

(Fertility First Sydney 2010)

ABSTINENCE

Increases levels of sperm DNA fragmentation. Infrequent ejaculation increases exposure of sperm to reactive oxygen species (free radicals) in testicular ducts and epididymis.

Sperm DNA fragmentation significantly reduced after 118 men were instructed to ejaculate daily for 7 days.

SPERM DNA DAMAGE – What do we know?

DNA fragmentation is when breaks occur in the sperm’s DNA strands which disrupt the genetic code.

It is normal for up to 1 in 5 sperm (20%) to have some DNA damage.

50-80% of men experiencing fertility problems have increased oxidative sperm DNA damage. (Iwasaki 1992, Agarwol 2006)

Mature eggs are able to repair some DNA damage in the sperm after fertilization but this ability is believed to decrease as a woman ages. (Alvarez 2005)
If more than 1 in 5 sperm (20%) have DNA damage there is an increased risk of
- infertility
- impaired embryo development
- the risk of miscarriage is 3-4 x higher
- genetic diseases and childhood cancer in the resulting children
(Tremellenik 2008)

Sperm DNA damage is increased by lifestyle factors
- inadequate nutrition
- increased weight
- smoking and substance abuse
- excessive coffee and alcohol intake
- environmental toxins such as heavy metals, solvents, radiation

Sperm DNA damage and reduced morphology can be improved by 3 months of lifestyle changes and nutritional supplementation in the majority of men. Changes result in significant increases in pregnancy and a reduction in miscarriage rates.

Treatments for men with increased levels of DNA fragmentation include
- healthy lifestyle changes
- frequent ejaculation
- oral antioxidant treatment
- nutritional supplementation as required
- detoxification
IMPORTANT NUTRIENTS TO SUPPORT FEMALE FERTILITY

FOLIC ACID
Folate is necessary for egg quality and maturation, implantation, development of the placenta and fetal development.
Necessary for the production of DNA and the protection against neural tube defects.

VITAMIN B12
Studies have shown its role in reducing the risk of miscarriage (Beenet 2001).
Increased supplementation may be necessary where there is impaired ovarian reserve (Forges 2007)

VITAMIN E
Has a role in miscarriage prevention possibly due to its promotion of circulation and prevention of abnormal clotting.
Important nutrient for estrogen production

VITAMIN C
Some studies have shown an improvement in women with luteal (progesterone) defects and also found to help women experiencing recurrent miscarriages (Agarwal 2005)

VITAMIN A
Vital for fetal growth and development (Gardiner 2008)
Caution, as high doses can be teratogenic.

VITAMIN D
One study found that women with higher levels of Vit D in both serum and follicular fluid were found to be significantly more likely to achieve a pregnancy following IVF transfer (Ozkan 2010)

IRON
Several studies have confirmed an improvement in both ovulation function and infertility(Chavarro 2006)
Deficiency has been associated with prematurity, low birth weight babies and fetal growth restriction (Gardiner 2008)

ZINC
Appears to improve egg development and ovulation function possibly because of its role in the synthesis of FSH and LH
Zinc deficiency has been associated with spontaneous miscarriage, toxemia in pregnancy, prematurity and low birth weight babies (Favier 1992)
SELENIUM
Vital for healthy cell division. Protects against chromosome derangement due to its antioxidant
effects. Deficiency is associated with retention of placenta and low birth weight babies (Bedwal
1994)

CALCIUM
Important nutrient for healthy cervical mucus
Supports fetal skeletal development
Helps to prevent toxemia in pregnancy

MAGNESIUM
Supports hormone balance
Important for regulating muscular contractions of the uterus, and fallopian tubes (egg/sperm
transport)
Helps ease inflammation e.g. endometriosis pain, painful periods

IODINE
Important for early development of the fetal central nervous system (Gardiner 2008)
Deficiency in pregnancy can have significant consequences for the baby’s neuropsychological
development (Tancred 1998)

COENZYME Q10
After the egg is fertilized cellular division of the embryo is driven entirely by the mitochondrial
function of the egg. CoQ10 is vital for this process. It is an important nutrient for ageing eggs.

ESSENTIAL FATTY ACIDS
Several studies have identified the link between maternal intake of Omega 3 oils and visual and
cognitive development in the offspring (Gardiner et al 2008)

PROBIOTICS
Several studies have shown the importance of probiotics, particularly in the third trimester. This
helps prevent allergies in the child, especially when there is a family history of allergies or if there
has been any bowel disturbances in the mother during pregnancy, or if antibiotics were used in
pregnancy.
IMPORTANT NUTRIENTS TO SUPPORT MALE FERTILITY

VITAMIN C
One study with oligospermic men supplementing with 1000mg 2 x daily found an increase in all sperm parameters. Counts increased 14million to 33million, motility 31% to 67%, morphology 43% to 67% (Akmal 2006).
Also found to decrease sperm clumping.

VITAMIN E
In a study looking at 38 men with a previous history of failed ICSI cycles were supplemented with both Vitamin C and Vitamin E 1gm each daily – implantation rates increased from 2.7% to 19.6% following treatment (Greco 2005)
Can improve both sperm concentration and motility.
Improves sperm ability to fertilise ova.
Improves DNA fragmentation rates (Geco 2005)

VITAMIN D
Link with Vitamin D deficiency and gonadal insufficiencies including reduced sperm count and motility (Kinuka 2000)

FOLIC ACID
Just as vital for men preconceptually as for women.
Low folic acid in men is found to damage sperm DNA, reduce sperm counts and is associated with genetically abnormal sperm

BETA CAROTENE / LYCOPENE
Betacarotene can improve both sperm concentration and motility (Eskenzil 2005)
Lycopene studies have shown favourable effects on sperm concentration, motility and morphology (Gupta 2002)

ZINC
Vital for adequate testosterone levels, sperm production and sperm motility.(Ebisch 2007)
Frequent ejaculation can contribute to zinc deficiency

SELENIUM
Several studies have confirmed an increase in both sperm count and quality with supplementation of selenium (Kestes 2003)
Necessary for sperm mitochondrial function (Hansen 1996)
COENZYME Q10
Can increase sperm motility due to its profound impact on the mitochondrial function of the sperm (Balercia et al 2003)

ARGININE
Shown to improve erectile function, low sperm counts and sperm motility (Morales et al 2003)

CARNITINE
Is concentrated in epididymis where sperm mature and acquire their motility – important for healthy vital sperm (Vitali 1995)

ESSENTIAL FATTY ACIDS
Lowered levels of essential fatty acids have been demonstrated in infertile men. Vital prostaglandin production is necessary for spermatogenesis are produced from Omega 3 fats. Research has shown that lowered prostaglandin levels in sperm also correlates with increased levels of abnormal sperm (Aksoy, 2006)

N.B. Although many of our required vitamins, minerals, amino acids, essential fatty acids, and other constituents are found in food, the physiologic demands of couples during preconception and pregnancy may require extra dietary supplementation. Always see your practitioner first about the proper regime for you.
### FOODS RICH IN ESSENTIAL NUTRIENTS

<table>
<thead>
<tr>
<th>Vitamin/Mineral</th>
<th>Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VITAMIN A</strong></td>
<td>fish liver oils, egg yolk, carrots, tomatoes, rockmelon, pumpkin, kumara, spinach</td>
</tr>
<tr>
<td><strong>VITAMIN C</strong></td>
<td>black currants, berries, red peppers, parsley, watercress, citrus fruit, broccoli</td>
</tr>
<tr>
<td><strong>VITAMIN D</strong></td>
<td>herrings, sardines, calamari, milk, egg yolk</td>
</tr>
<tr>
<td><strong>VITAMIN E</strong></td>
<td>wheatgerm, sesame seeds, egg yolks, almonds, sunflower seeds, olives</td>
</tr>
<tr>
<td><strong>VITAMIN B12</strong></td>
<td>chicken liver, sardines, mussels, oysters, eggs, beef, lamb</td>
</tr>
<tr>
<td><strong>FOLIC ACID (B9)</strong></td>
<td>green leafy veges, whole grains, legumes, sunflower seeds</td>
</tr>
<tr>
<td><strong>IRON</strong></td>
<td>mussels, oysters, red meat, green leafy vege, sesame seeds, nuts</td>
</tr>
<tr>
<td><strong>IODINE</strong></td>
<td>iodised salt, milk, egg yolk, seaweed, oysters, mussels</td>
</tr>
<tr>
<td><strong>SELENIUM</strong></td>
<td>brazil nuts, mushrooms, egg yolks, wholemeal flour, oats, fish, sesame seeds</td>
</tr>
<tr>
<td><strong>CALCIUM</strong></td>
<td>broccoli, cabbage, nuts, dairy products, figs, spinach, salmon, sardines</td>
</tr>
<tr>
<td><strong>MAGNESIUM</strong></td>
<td>nuts, dark chocolate, red meat, milk, bananas, dried fruit, legumes, spinach</td>
</tr>
<tr>
<td><strong>COENZYME Q10</strong></td>
<td>sardines, mackerel, eggs, spinach, broccoli, wheatgerm, peanuts</td>
</tr>
<tr>
<td><strong>ESSENTIAL FATTY ACIDS</strong></td>
<td>fish, fish oils, flaxseed oil, walnuts</td>
</tr>
<tr>
<td><strong>ARGININE</strong></td>
<td>chocolate, oats, coconut, wholewheat, wheatgerm, peanuts</td>
</tr>
<tr>
<td><strong>CARNITINE</strong></td>
<td>red meat, whey protein, milk, poultry, avocados</td>
</tr>
</tbody>
</table>
INSTRUCTIONS FOR RECORDING YOUR TEMPERATURE AND CERVICAL MUCUS

Temperature:

- Your temperature readings confirm whether you have ovulated. The temperature should rise as soon as you have ovulated and then remain high until it dips again just before your next period. Therefore, a healthy chart should be biphasic.
- Temperatures are most accurately taken with a proper fertility thermometer from a pharmacy.
- Your temperature is taken under your tongue first thing in the morning, before getting out of bed. On your chart place a dot in the box which corresponds to your temperature and day of cycle. Day 1 is the first day of your period.
- Your temperature needs to be taken at the same time each morning because generally temperatures rise gradually throughout the day until about 2.00 p.m. For each hour later than the usual time the temperature is recorded one temperature row below. For each hour earlier the temperature is recorded one row above. e.g. If you normally take your temperature at 6.00 a.m., though you sleep in until 8.30 a.m. and your temperature is 36.7 degrees, you should record your temperature at 36.45 degrees. (Make a “slept-in” note in the “Conditions Affecting Temperature” box).
- Conditions affecting your temperature may include things like a late night, fever, a cold broken sleep or alcohol. These may cause abnormally high or low temperatures, resulting in inaccurate chart interpretation if not noted down.

Mucus:

- The nature of your cervical mucus tells you when you are approaching ovulation.
- Check your mucus every time you go to the toilet, before urination although you only need record your most fertile reading of the day. Record the external sensation, the amount and the texture on your chart before going to bed at night. e.g. mucus may be dry, creamy with a small amount in the morning, but by evening it may be moist, creamy and increased in amount. Record the latter interpretation only.
- Between the thumb and forefinger collect the mucus from the vaginal opening.
- External sensation – Use one of the 3 following to describe the external sensation: dry, moist/damp, or wet. The wetter the sensation, the more fertile you are.
- Amount – this will increase as you get closer to ovulation. It is best recorded in a bar graph form which is easily read.
- Texture – this can vary from none or pasty in the non-fertile phases, to creamy or milky in the stages around ovulation, to clear, stretchy or like raw egg white at ovulation. Each woman is different and mucus can vary from cycle to cycle.
Most fertile time and the best time to attempt conception is when a woman’s mucus is wet, slippery and of egg white consistency, usually over a 2-3 day period. The last day of this fertile-type mucus is usually the day of ovulation and should be followed by a temperature rise. This temperature rise confirms that ovulation has taken place. As sperm live for 3-5 days, it is best to try and have intercourse in the 2-3 days preceding and on the day of the egg release, so that sperm can fertilize a fresh egg. The lifespan of an egg is 12-24hours.

Other:

The other rows on your chart will help both yourself and your practitioner understand what else is happening with your cycle. Give the pain and emotions a rating out of 10. Tick “intercourse” and “sexual desire”, which usually increases around ovulation, and can help with timing of conception. When appropriate, mark in the “bleeding” row bleeding with a B and spotting with a S.

You may find this a little overwhelming at first; however, after about 3 cycles you will start to see an obvious pattern and be much more aware of your fertility. Your practitioner can help you to interpret your cycle to enhance conception attempts.

NOTE: Remember to photocopy enough charts for a few cycles before beginning.