HEALTH ADVICE IF YOU WANT TO HAVE A BABY

WHAT CAN YOU DO YOURSELF?

Centrum voor
Reproductieve Geneeskunde

CONTACT DETAILS

Centrum voor Reproductieve Geneeskunde
Universitair Ziekenhuis Brussel
Laarbeeklaan 101, B-1090 Brussel (Jette)
www.brusselsivf.be

Contact Centre CRG	+32 2 477 66 99
> for general information and appointments	crg@uzbrussel.be (!)

(!) Please note! No electronic communication about your treatment is possible.

Treatment planning	+32 2 477 66 19
Daily Patient Monitoring (DM)	+32 2 477 88 88
For external investigations, please send the results of blood tests and ultra sound scans **before 2:00 pm** by fax or e-mail	fax +32 2 477 88 89 crgdm@uzbrussel.be
Andrology laboratory	+32 2 477 66 52
> appointments for semen analysis	
CRG Ward	+32 2 477 66 44
Operating Theatre	+32 2 477 66 20

COLLABORATING DEPARTMENTS

Medical Genetics Department	+32 2 477 60 71
> for information about PGD	pgd@uzbrussel.be
Radiology Department	+32 2 477 60 50
Prenatal medicine	+32 2 477 60 20
Delivery room	+32 2 477 67 88
Children's hospital admissions department	+32 2 477 87 78
Billing	+32 2 477 55 42

FOR PAYMENTS BY DIRECT BANK TRANSFER
IBAN: BE86 4324 0168 7150
BIC: KREDBEBB
REF.: CRG / PATIENT NAME / DATE OF BIRTH

HEALTH ADVICE IF YOU WANT TO HAVE A BABY

WHAT CAN YOU DO YOURSELF?

Centrum voor
Reproductieve Geneeskunde

Universitair Ziekenhuis Brussel

CONTENT

HEALTH ADVICE IF YOU WANT TO HAVE A BABY
WHAT CAN YOU DO YOURSELF?

Become pregnant more easily

The effect of lifestyle and health on your fertility

A healthier baby

How can you yourself contribute to the health of your baby?

Everything OK?

How can you monitor the health of your during pregnancy

[1] ART = (medically) Assisted Reproductive Treatment. In Dutch we use the acronym "MBV" (Medisch Begeleide Voortplaning), in French "PMA" (Procréation Médicalement Assistée)

INTRODUCTION

For many years and throughout the world, people have been researching how 'lifestyle' can affect how quickly you become pregnant. Scientifically supported articles indicate that a variety of factors can have a significant effect on your fertility and on the health of the embryo in your womb.
In this brochure we bring together the most important information regarding this topic, neatly divided into two types of health advice: what you can do to become pregnant more easily and how you can contribute to the health of your baby. For clarity: this information applies to all women who want to become pregnant and/or who are pregnant, including spontaneously conceived pregnancies. But if you are awaiting fertility treatment, you are of course approaching things from another perspective.

We call treatment with artificial insemination or IVF[2]/ICSI[3] 'successful' if the patient becomes pregnant and has a baby. Because most would-be parents who turn to assisted reproductive tech-

niques do so because they a have fertility problem, it sometimes seems as if you as the patient cannot do anything to increase your chance of pregnancy. Nothing could be further from the truth. Certainly for you (both) the recommendations in the first part can make the difference between being pregnant or not.

In the second part we focus on the health of the embryo in your womb if you are pregnant. How can you influence that positively yourself? Why should you take folic acid as soon as you plan to become pregnant? Should you get yourself vaccinated in advance against particular diseases or are (some) vaccinations not advisable? Do nutritional supplements help and is coffee a bad idea? And what about that cigarette and that little glass of alcohol, should you really declare them taboo?

The health of your hoped-for baby is also the subject of the third part of the brochure, but rather from a medical point of view: via which prenatal examinations can you follow the development of your baby and should you also get these done as a matter of course?
Finally we still support the follow-up of ART pregnancies and ART babies for scientific purposes. That scientific research consists on one hand of prenatal surveying of all pregnant CRG patients, on the other hand of postnatal research on a very large population of children born from their parents' ART treatment. Thanks to the consistent, sustained research work over the past decades – we began doing it as soon as the fertility clinic was started, more than 25 years ago – we have collected a mine of information about the effect of ART treatments on the health of mothers and babies. That information has among other things contributed to the development of more effective treatments, and thereby also to the comfort of our patients.

We hope that this information brochure will help you be rewarded by the birth of a healthy baby after your fertility treatment.

[2] IVF = in-vitro fertilisation or 'fertilisation in glass', i.e. in a Petrie dish in the laboratory. With the standard method we bring eggs together with a multitude of (selected) sperm.
[3] ICSI = intracytoplasmic sperm injection. The laboratory fertilisation is done by injecting one sperm into each egg.

BECOME PREGNANT MORE EASILY

THE EFFECT OF LIFE AND HEALTH ON FERTILITY

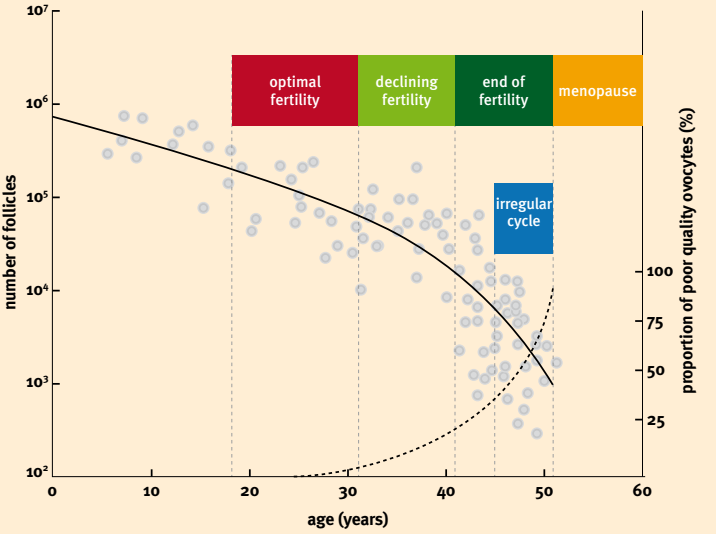
Your age (as a woman)

The chance of becoming pregnant declines strongly as you (as a woman) get older.

With spontaneous pregnancy we can note the following statistical data:

- 22 years is the average age at which women are most fertile;
- 71% of women younger than thirty years are pregnant within three months;
- 41% of women older than 36 years are pregnant within three months.

The cause of that rapidly declining fertility is the fact that you as a woman are born with a certain number of eggs. Even before you become fertile (at puberty) a large part of them have already 'died'. In the course of your fertile life that reduction continues: each month a number of eggs mature and only one of them is released in ovulation. If it is not fertilised, the eggs



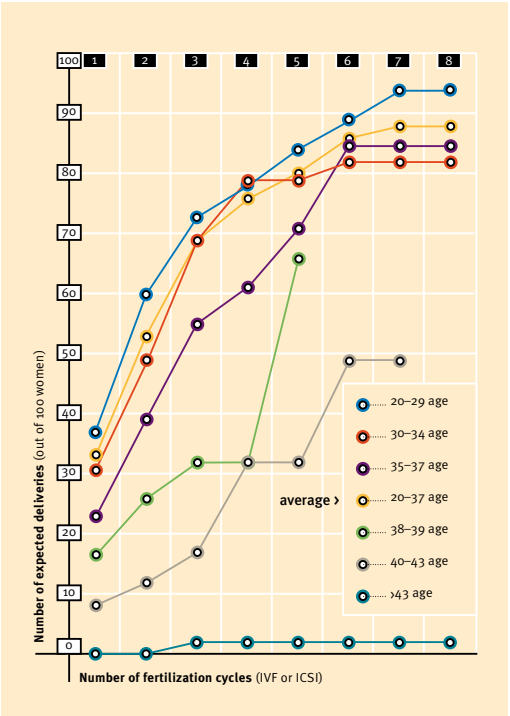
of that cycle are in other words 'lost'. But even the eggs that remain in the ovary decline in quality: due to aging, as the result of your lifestyle, due to environmental effects, sometimes due to health problems.

As the above shows, from the age of 35 years we can see an obvious drop in the number of remaining eggs and their quality. The majority of women have hardly any eggs of good quality that can still mature at the age of forty. So that is long before the menopause starts (around the age of fifty).

Chance of success of IVF/ICSI treatment

Age also plays an important role in medically assisted reproduction. The following graph shows the relation between the expected percentage of births, the age of the woman and the number of attempts undertaken (IVF/ICSI). The vertical axis shows the cumulative number of women (per hundred) of each age who may have a baby after IVF/ICSI-treatment; the horizontal axis shows after how many attempts.

One example: in the 20 to 29-year-old age group the expectation is that of the hundred women who start IVF/ICSI, 37 of them will have a baby after the first attempt, 60 of the same 100 after two attempts and 73 of that 100 after three attempts. Regarding 'average' chances of success – i.e. all ages put



The average chance of success of an IVF treatment is closely related to the woman's age, as can clearly be seen in this graph.

together and regardless of the number of attempts – we can give the following figures. Of all egg retrievals that are performed in one year in the CRG, almost ninety percent succeed in developing embryos from the eggs obtained that can be placed in the uterus. After transfer of the embryos there is an average chance of pregnancy of 38 percent and finally an average chance of giving birth of 28 percent; all compared to the total number of egg retrievals (figures based on 2010 results).

Your age (as a man)

In contrast to the woman, your age as a man plays only a small role in your partner becoming pregnant and in the health of the offspring.

There is a small effect of your age on the ease with which your partner becomes pregnant, which is mainly relevant if the woman is also older. In other words an 'older' man (e.g. above the age of fifty) will arrive at a pregnancy with a 'younger' woman (e.g.

under the age of 35) just as easily as a man aged 35. However if the same 50-plusser tries to make a woman aged 39 pregnant, that will take more time than if a man of 30 were to try.
There is no increased risk of miscarriage or of genetic abnormalities in the embryo if the man is older. The only clearly proven effect of the age of the male partner on the health of the embryo, concerns skeletal abnormalities such as dwarfism: there we see the risk increase with the age of the father. Nevertheless – and luckily – that remains in general a rare abnormality: fewer than 1 per 10,000 births.

Smoking behaviour

if you want to become pregnant, you should stop smoking immediately. Smoking – and the breakdown products of nicotine – have a large and deleterious effect on egg maturation, the reserve of eggs, the (genetic) quality of the eggs and on the possible implantation of the embryo.
As a man you should stop too: the genetic quality of the sperm cells in smokers is significantly worse than in non-smokers, something that cannot be seen in the number of sperm or in their motility. Furthermore passive smoking, meaning your partner who is smoking too, indirectly, in your company, likewise has a negative effect on her fertility.

It is clear from studies that both actively and passively smoking women take longer to become pregnant spontaneously:

- non-smoking women spontaneously become pregnant almost twice as fast as actively smoking women;
- passive smokers (women whose partner smokes) see their chance of spontaneous pregnancy 'delayed'.

Women who smoke not only have a greater chance of reduced fertility, but during pregnancy the risk of an early miscarriage is higher than in non-smokers. There is also an increased risk of an ectopic pregnancy. Finally the menopause starts one to four years earlier in smokers than in non-smokers.

It is important for all women who would like to become pregnant to be aware of these facts, but particularly if you are awaiting fertility treatment. A number of studies have demonstrated that women who smoke need almost twice as many treatment cycles as non-smokers to achieve a pregnancy. So we should inform you that although you are entitled to six courses of hormone therapy as a woman covered by Belgian health insurance, being a smoker reduces the chance of success of every cycle by 50%. So that's like having only three chances instead of six.

Positive note!
If you stop smoking before you begin fertility treatment, your chance of pregnancy and giving birth rapidly becomes as great as that of non-smokers. So stopping smoking really is worthwhile.

Although smoking in the male partner at first sight has little effect on the 'visible' sperm quality (quantity, motility, for example) the genetic quality of the sperm cells will suffer enormously from it. Hence it can be more difficult to father a child (you will have to wait longer) and the chance of a miscarriage increases. In IVF/ICSI fewer good quality embryos will develop if the man smokes.

Use of alcohol

Drinking alcohol is not a good idea for women who want to become or are pregnant. Although there is no clear evidence that normal, moderate use of alcohol reduces your chance of (spontaneous) pregnancy, it appears probable that this is the case if alcohol consumption is excessive.

Likewise in patients (men or women) who undergo IVF/ICSI-treatment, there is as yet no clear evidence that normal, moderate use of alcohol reduces the chance of success of their treatment. But the most important reason for not combining medically assisted reproduction procedures with (some degree of) alcohol is the fact that you would do well to avoid all alcohol during pregnancy. Since you never know exactly when you begin a pregnancy, you should stop as soon as you start your treatment. We will return to the use of alcohol and the possible effect of this on the health of the embryo (p. 32).

A healthy body in a healthy environment

In general a healthy body functions better than a body that is out of equilibrium. This also applies if you want to become pregnant. Therefore it is already a good rule that you try to maintain healthy eating habits – including drinking sufficient water per day – and keeping your rhythm of life a bit steady.

The effect of underweight and overweight

Neither being underweight or overweight are beneficial for your chance of pregnancy, but the effect of being overweight is much larger. That is so at the individual level, but it is also a broader societal phenomenon, since overweight is more common in the western population than underweight.

Anyway, disproportional body weight in women leads to subtle hormonal disorders and thereby to reduced fertility, usually as the result of disturbed ovulation (ovulation disorders). Moreover a connection has been established between obesity and the occurrence of PCOS or polycystic ovary syndrome, i.e. the formation of multiple cysts in the ovaries.

BMI = Body Mass Index.
The figure is obtained by dividing your weight by the square of your height.

BMI = body weight (in kg) / body height^2 (in metres)

The following figures are known for Belgium:

- in the male population 41.4% are struggling with overweight (BMI > 25 and < 30) and 10.7% with obesity (BMI > 30);
- in the female population the percentage of women who are overweight amounts to 29.8% and who are obese is 10.2%.

In spontaneous pregnancy

The following table shows to what extent your BMI affects your chance of spontaneously becoming pregnant. You can immediately see from it that overweight in the male partner also has a strong effect on your chances as a couple of becoming pregnant.

Woman	**Man normal**	Man overweight	Man obese	BMI
Underweight	1.00	1.20	1.95	underweight < 18.5
Normal	**1.00**	1.18	1.53	**normal 18.5 to 25**
Overweight	1.36	1.41	1.79	overweight 25 to 30
Obese	1.74	2.07	2.74	obese > 30

The figures are derived from a large-scale study in people who did become pregnant in the end: the comparison between the different groups concerns the time it took to get that far. The reference group is printed **in bold**: that in which both the woman and the man had a normal BMI. They took on average a certain time in which to get pregnant. That is the reference '1'.

As you can see, almost every combination of abnormal body weight leads to a longer 'waiting time for pregnancy'. Please note, of course we are always talking here about averages, you cannot adapt the figures like a mathematical formula to your individual situation.

The prolongation of waiting time is clearest with two obese partners: it takes them 2.74 times as long (more than 170%) to get pregnant than two partners with a normal BMI. But also a woman who is overweight in combination with a man with a normal BMI takes 1.36 times (more than 30%) longer to achieve this.

In women who are underweight we likewise see a longer waiting time, except in combination with a man with a normal BMI.

What happens with fertility treatment?

The reduced chance of pregnancy with an abnormal BMI also applies in the case of medically assisted fertilisation. It has been shown by a Dutch study that women who are overweight in comparison with women with a normal weight only have a two-thirds chance of becoming pregnant after IVF/ICSI-treatment.

BMI	Woman	Slaagkans
< 20	underweight	0.80
20 – 24.99	**normal**	**1.00**
25 – 29.99	overweight	0.80
30 – 34.99	obese	0.73
≥ 35	extremely obese	0.50

How your BMI affects the chance of success of IVF/ICSI treatment.

You can read a reduction of almost twenty percent as: of the six cycles that the health insurance company will pay for, one will be lost. For a 50% reduction you keep only half of your number of reimbursable attempts. Therefore, and if you are overweight, you are recommended to try to lose weight before you start fertility treatment.

Positive note
If you are extremely overweight, you can still improve your chances of pregnancy strongly with relatively little effort. If you are e.g. 1m65 tall and you weigh 95 kg then, by losing about eight kilos, you can improve your chance of success by 50%. Surely it's worth making the effort?

What should I do during pregnancy?

Another strong motivation to try to lose weight if you want to be pregnant is that obesity also has clear deleterious consequences for your health during pregnancy and even after birth:

- during pregnancy you have an increased chance of developing diabetes, high blood pressure, and of the incidence of deep vein thrombosis (blood clots);
- you have an increased risk of a birth requiring an operation or a birth that requires instruments;
- you have an increased chance of bleeding and infections after birth; and
- even after birth you still have an increased chance of developing diabetes, high blood pressure, cancer of the uterus and cardiovascular disease.

The effect of your eating habits

A healthy diet is essential to optimise your chance of pregnancy. We cannot formulate strict guidelines, but there is good evidence that a well-balanced diet helps your body be healthy and function normally. Moreover variation in your eating habits implies that you are varying your consumption of the vitamins and minerals you need.

Nutritional supplements?

Whether nutritional supplements lead directly to an increased chance of pregnancy has not (yet) been clearly proved. One of the positive effects claimed is supposed to be on the sperm quality in the man, but to prove even that effect, more reliable studies are necessary.

For a specific group of nutritional supplements that are known as antioxidants (e.g. vitamin E), it appears there is a positive effect on couples who are taking part in IVF/ICSI treatment.

In general, naturally we can state that it can do no harm to take nutritional supplements, at least as long as their cost remains reasonable.

Gender-determining diet?

Whether you can affect what sex your baby will be by what you eat is unclear. According to one Dutch study a diet rich in calcium and magnesium is supposed to increase the chance of a girl, while a 'boy diet' on the other hand is supposed to require salty foods.

Caffeine?

Caffeine and similar substances are found in coffee, tea, soft drinks, energy drinks and chocolate, but also in some painkillers and diet pills. Many people wonder whether the consumption of caffeine affects their fertility and has an effect on the chance of success of IVF/ICSI-treatment.

Although there are some indications that too much caffeine reduces your chance of a spontaneous pregnancy, a direct and clear connection has not yet been demonstrated.

The same applies to the effect with fertility treatment. Some studies indicate a reduced chance of success, then again others

can find no connection. It is clear that further research is still needed in this field.

Anyway, it is worth recommending that you temper your caffeine intake if you undergo fertility treatment.

The effect of physical exercise

Just like healthy eating habits, sufficient physical exercise contributes to better health and thus to a better functioning body. Further on (see p. 32) we will go more deeply into the effect of sports exercise on pregnancy, but here we would like to talk about one specific aspect: physical exercise during fertility treatment.

This is because it is a popular misconception that you should keep extremely still after the embryo transfer in IVF/ICSI treatment so that the implantation does not fail. There is no truth in this: after an embryo transfer you can do nothing – neither medical, nor regarding behaviour – to encourage implantation.

Studies have investigated whether bed rest after the transfer has a favourable effect on the treatment's chance of success. The outcome was clear: there is no indication that bed

rest would lead to a greater chance of pregnancy. For other activities (working, travelling, normal sporting activities, bathing, etc.) there is also no reason to assume that they might have a negative effect.
So it is not at all necessary for you to feel guilty if the embryo does not implant: your physical behaviour has nothing to do with it.

In insemination treatment you will be asked immediately after the insemination to remain lying down quietly for ten minutes. That has to do with the fact that semen is a fluid that rapidly changes from thick and sticky to thin and fluid. To give the sperm cells in the uterus a chance to find their way to the Fallopian tubes, you should better rule out the effect of gravity for a short period of time. By doing this you double (!) the chance of pregnancy after insemination.
After that the same applies as after an embryo transfer: you can immediately get on with your normal life again, except that for the first few days you should better not take a bath, but a shower.

The effect of stress?

At present there is no clear scientific evidence that stress could have an effect on your fertility or on the chance of success of your fertility treatment. Some studies mention as negative effects of (excessive) stress: sexual dysfunction, eliciting unhealthy eating habits, an increased chance of unsuccessful embryo implantation, an increased chance of spontaneous miscarriage, etc. However logical they sound in connection with stress, none of the effects mentioned has been conclusively scientifically demonstrated. Once again further research is necessary.
Nevertheless it appears clear that psychological support can help keep the tension that fertility treatment sometimes entails within limits. Stress management can in other words contribute to your comfort as a patient.
Moreover it has certainly been proved that excessive stress can be a reason why patients break off their treatment prematurely.

The effect of the environment?

It has been scientifically proved that particular chemicals and other substances foreign to the body do reduce fertility. But whether environmental pollution in general has a negative effect has not to date been clearly demonstrated in human beings.

Does acupuncture help?

In past years acupuncture has gained greatly in popularity, also in the context of IVF/ICSI treatments. Because of this numerous reliable studies have already been conducted to investigate the effect of acupuncture on women who are undergoing fertility treatment. Although the findings of the different studies are sometimes contradictory, it has become apparent that overall the use of acupuncture does not lead to an increased chance of pregnancy with IVF/ICSI.

A HEALTHIER BABY

HOW CAN YOU CONTRIBUTE TO THIS YOURSELF?

FOLIC ACID

Every woman who attempts to become pregnant would do well to take folic acid preventively. Folic acid is one of the B vitamins, mainly found in fresh vegetables, fruit, dairy and wholemeal products. If you eat a healthy and varied diet, you will get sufficient of this.

Nevertheless women who want to become pregnant– and thus also all women who would like to undergo fertility treatment in the CRG – are advised to take a folic acid supplement. The fact is that studies have demonstrated that a daily dose of 0.4 mg (= 400 µg) folic acid during the first three months of pregnancy reduces by half the chance of a neural tube defect in the foetus (open spine, open skull, hare lip or cleft palate).

You are advised to start taking folic acid three months before the pregnancy, at a daily dose of 0.4 mg.

If you are pregnant with multiple foetuses increase the dose to 4 mg per day. If you have previously had a baby with a neural tube defect, if you are a diabetes patient or if you are taking / have taken medicines for epilepsy, you should take that higher dose too.

You take the pills at least during the first three months, but you can also continue throughout your pregnancy and even after the birth for the period when you might be breast feeding.

If you do not become pregnant immediately, you can just continue taking the folic acid. Taking it for months on end has absolutely no negative effects.

Folic acid 0.4 mg and 4 mg can be obtained from the pharmacist.

SMOKING BEHAVIOUR & USE OF ALCOHOL

We have seen already that smoking can be a cause of reduced fertility and it can negatively affect fertility treatment.

But also if you are pregnant, smoking is out of the question, both for yourself and for the growing foetus in your womb. You not only run a greater risk of an ectopic pregnancy and a miscarriage, but also the chance that you give birth prematurely is higher than in non-smokers. Your smoking behaviour can affect the future fertility of the unborn child and lead to a lower birth weight. The risk of childhood cancer is also higher in the children of smokers.

Use of alcohol during pregnancy likewise has a negative impact: you run an increased risk of a miscarriage, a low birth weight baby and premature birth.

Moreover and although it is still often said that 'just a glass' can cause no harm during the pregnancy, some large-scale American studies have demonstrated that alcohol is definitely dangerous for the developing foetus, even consumed in small quantities. That is certainly the case in the first three months of pregnancy, including the period of missing menstruation.

The specific abnormalities that the baby can suffer if you drink large amounts of alcohol are summarised under the name 'foetal alcohol syndrome' or FAS. There is usually a combination of symptoms: a baby with FAS has a smaller head, a lower birth

weight and particular abnormal facial characteristics. Many babies also have more or less severe mental retardation.
So to rule out any risk to the baby we advise to drink no alcohol. This advice applies not only during the pregnancy, but also in advance of it: from the moment that you are trying to become pregnant. The third week after fertilisation – i.e. in the period when your period is late – the foetus is very vulnerable to alcohol.

www.nofas.org
www.nofas-uk.org

PREVENTION OF INFECTIOUS DISEASES

During pregnancy a woman can catch particular infections that may possibly cause harm to the foetus. The nature of that harm depends on the type of infection and the point in pregnancy at which they occur.

Therefore it is a good idea to get yourself vaccinated for particular infectious diseases and/or to devote the necessary attention to preventing them.

Rubella (German measles)

Rubella is a childhood disease that most of us have already had or against which we have been vaccinated. A small percentage of women who are not protected run the risk of catching the disease during pregnancy. If this occurs in the first sixteen weeks of pregnancy, the consequences may be severe: miscarriage, retarded growth, stillbirth, mental retardation, eye abnormalities (including cataract), deafness, meningitis, cardiac abnormalities, spastic paralysis.

The severity of the possible abnormalities depends on the particular point in pregnancy at which the infection occurs. If it is caught in the first twelve weeks the chance of the foetus being infected amounts to more than eighty percent. In that case more than half of the infected foetuses display one or more abnormalities. After the sixteenth week congenital abnormalities as a result of rubella are less severe.

In view of the severity of the conditions if infection of the foetus is proved a termination of pregnancy is sometimes proposed.

How can you protect yourself against rubella?

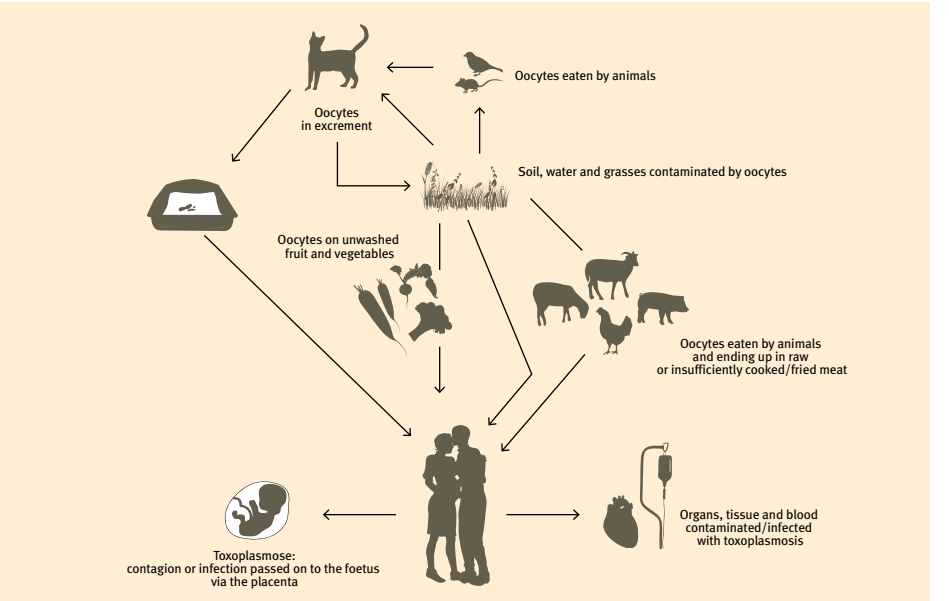
Before starting fertility treatment we can check whether you have antibodies against rubella, e.g. from a previous vaccination. If that is not the case, then it is best to get vaccinated before you start the treatment. If doing that, allow an interval of at least one month between the vaccination and the start of the treatment.

Toxoplasmosis

Toxoplasmosis is an infectious disease that is caused by the parasite toxoplasma gondii. In itself it is not a severe disease for adults: it produces no or only vague symptoms such as tiredness, slight fever, swollen glands.

But if a pregnant woman picks up a toxoplasma infection, the infection can go to the foetus. The risk increases from 25 percent in the first three months to 60 percent in the third three months of the pregnancy. An infection at the start of the pregnancy can cause severe abnormalities in the foetus, mainly in the eyes and the nervous system. That can result in severe loss of vision, hydrocephalus, the death of the foetus, mental retardation, pneumonia, hepatitis.

The cycle of toxoplasma gondii
Oocytes are here the eggs of the toxoplasma parasite.



If diagnosed swiftly we can sometimes prevent the chance of foetal infection and severe foetal injuries due to rapid administration of antibiotics. But in view of the severity of the possible conditions, if infection of the foetus is proved a termination of pregnancy is sometimes also suggested.

How does one catch toxoplasmosis and how can you prevent it?

The toxoplasmosis parasite lives in many animals, including pigs, cows and sheep. You can get infected with it by eating raw or insufficiently cooked meat. However well-cooked meat does not constitute a risk.

The parasite experiences its sexual reproductive cycle in felines, so it can also be found in the droppings of cats. And cat droppings may be present in our immediate environment without us being aware of them.

You can only suffer one toxoplasmosis infection in your life. In other words if you have been infected before your pregnancy, that protects both you and the foetus.

We can check whether you have antibodies against toxoplasmosis by doing a blood test. Fifty percent of people are immune in any case and have nothing to fear.

If you have never been infected before your pregnancy, avoidance is your only strategy, since there is no vaccine against toxoplasmosis. Fortunately there are some simple hygienic rules you should observe to prevent it:

- do not eat raw meat during your pregnancy. Well cooked meat is not a risk;
- wash your hands after contact with raw meat;
- wash all vegetables and fruit thoroughly;
- wear gloves if you work in the garden;
- get the cat box cleaned daily (by someone else);
- avoid sandpits in which cats can also enter.

Cytomegaly virus

Cytomegaly virus (CMV) is a potentialy harmful virus for your unborn child. The most important source of the CMV virus is young children. So people who care for children, infant teachers and mothers of young children run a higher risk of infection.

The disease often occurs in adults without many symptoms or is experienced as a mild flu. In Europe approximately 45 percent of fertile women have had CMV at some point, but in contrast to rubella and toxoplasmosis the presence of antibodies does not rule out the chance of a new infection.
Nevertheless, if CMV infection occurs during the pregnancy of a woman with antibodies the chance of infection of the foetus is small (less than one percent). For women who have never come into contact with CMV, it is another story. If a CMV infection occurs at the start of pregnancy, it will on average affect forty percent of foetuses. Of that group of affected foetuses only one in ten will display acute symptoms at birth: these include an abnormally small head, small haemorrhages on the skin (ecchymosis), jaundice, eye infections. Later some form of handicap may well appear, however, such as hearing loss or mental retardation.

Prevention of CMV infections

There is no effective treatment or vaccination against CMV infection. The only thing you can do is take strict hygienic measures during your pregnancy, in particular if you frequently come into contact with young children:

- wash your hands regularly and carefully;
- clean the children's toys;
- avoid contact with the saliva or urine of children.

Extra prevention during fertility treatment

Because of the (theoretical) risk of transferring the infectious diseases described here via infected reproductive cells (eggs, sperm cells, embryos), fertility centres are legally obliged to investigate at each new attempt whether patients are infected with hepatitis B or C, HIV virus or syphilis.

A fertility laboratory that includes a human reproductive material bank should be one hundred percent certain that it is working with infection-free cells and that it can keep them free of infection. Therefore both the man and the woman will have to undergo a blood test for these infections at each new IVF/ICSI attempt.

Hepatitis B (jaundice)

Hepatitis B is a viral disorder, which is primarily passed on through contact with infected blood. However infection is also theoretically possible via infected eggs, sperm and embryos.

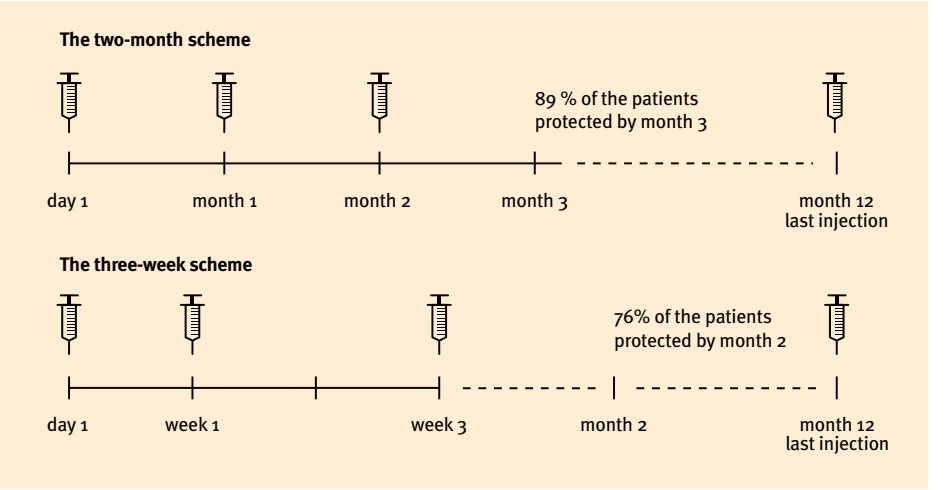
Hepatitis B infects the liver and often occurs unnoticed. A proportion of people who have had jaundice remain carriers of the virus after the infection has subsided. We call these people 'healthy carriers': they themselves are not ill, but they do remain infectious to other people.

Women who are healthy carriers run little risk during their pregnancy that the foetus will experience problems from this. However during the birth the baby might come in contact with the virus and thus become infected. In this situation the baby will need an injection a few hours after birth with antibodies against hepatitis B, in order to prevent the virus causing liver disease. In a second phase the baby will be vaccinated to build up its active immunity against the virus.

Prevention of Hepatitis B

Since fertility centres are obliged to screen their patients for HIV, Hepatitis B and C and syphilis at each new fertility attempt it is perhaps not a bad idea to get vaccinated against Hepatitis B before you start the treatment. By doing this you avoid the possible transfer to the foetus if you were to get infected with the virus during pregnancy, and thus you avoid the possible infection of hospital personnel or your partner.

There are several vaccination schedules, which always run over several months. But there is also a shortened timetable, with



three injections spread over a period of two months or even only three weeks.

In the two-month scheme you get three vaccinations, on day 1 (month 0), in month 1 and in month 2, with at least three weeks between them. A last vaccination follows in month 12.
Three months after the start of the vaccination 89% of those people vaccinated prove to be protected against hepatitis B.
In the three-week scheme you likewise get three vaccinations, on day 1 (week 0), in week 1 and in week 2. A last vaccination follows also here in month 12.
Two months after the start of the vaccinations 76% of those vaccinated are protected against hepatitis B. After eight months that is 94% and after the fourth dose in month 12 it finally becomes 98%.

Please note! There is only one vaccine on the Belgian market that has been approved for a shortened vaccination schedule. If you are considering this vaccine, you should ask for it from your doctor.
The situation may be different for foreign patients, as not every medicine is available in every country.

Syphilis

Syphilis is a sexually transmitted disease that people sometimes do not know they have caught. A woman who has been infected and not effectively treated, becomes a chronic carrier. During the pregnancy she can pass on the bacteria to the foetus via the placenta.
In thirty percent of cases that does not cause problems, but the remaining foetuses have a considerably increased risk of

abnormalities: skin abnormalities, rhinitis, an enlarged liver, visual, skeletal and dental abnormalities, deafness.
If we detect syphilis in the first blood sample, we can first treat the disease with antibiotics and thus prevent you passing on the infection to your baby in a future pregnancy.

HIV or the AIDS virus

HIV (the virus) and AIDS (the disease) constitute a real problem in contemporary society. AIDS is an irreversible viral disorder: once someone is infected, the virus remains in the body and can cause progressive destruction of the immune system.
Infection is passed on through contact with bodily fluids that contain the HIV virus. So an HIV-positive pregnant woman can pass on the virus to her baby (thirty percent chance). HIV likewise increases the chance of miscarriage, premature birth and foetal death.
For would-be parents who are HIV-positive we can strongly reduce the chance that the baby is infected, by antiviral treatment during the (infertility) treatment.

www.brusselsivf.be/infectious-management flowsheet
For HIV-positive would-be parents the CRG has developed a system for infections, to try and prevent the infection being passed on to the foetus as efficiently as possible.

Whooping cough (Pertussis)

Whooping cough is an infectious disease that in the first instance affects the respiratory system: the larynx, the trachea and the airways. The disease is most dangerous for babies, in whom severe complications can arise: pneumonia, nervous disorders (e.g. convulsions) or brain damage. Because of these severe complications in babies and because of the fact that babies generally catch the infection via the mother, it is recommended that you get vaccinated before you start a pregnancy or fertility treatment.

What about the flu vaccine?

During a flu epidemic pregnant women – like older people and young children – belong to the at-risk groups. Certainly in specific variants of the flu virus – such as in the recent past the Mexican flu – pregnant women appear to be more badly affected than the average population. Complications included pneumonia with sometimes severe respiratory problems and an

increased risk of a hospital admission (up to ten times higher than in the general population).

For vaccination against seasonal flu we can formulate the following recommendations:

- women who will be pregnant during the flu season and in the second or third three-month period should get vaccinated;
- vaccination during pregnancy is safe in the second and third three-month period;
- women who want to become pregnant, can also get themselves vaccinated against seasonal flu (if they wish) before fertilisation.

Vaccinations to avoid

Vaccines that contain live attenuated viruses or bacteria are not advised during pregnancy and thus also (not advised) at the start of fertility treatment. We advise that you contact a doctor before getting yourself vaccinated and always state that you are intending to become pregnant. In the case of injections against tropical diseases, you can request additional information from the Centrum voor Reis- en Vaccinatieadvies (Centre for Travel and Vaccination Advice) of the UZ Brussel (building C, level -1)

PREGNANCY AND MEDICINES

The general rule is simple: never use medicines on your own initiative. So-called harmless household remedies may prove not to be harmless at all during pregnancy and cause damage to the growing baby in your womb. So always consult your (family) doctor before you take something and always mention to a doctor who is prescribing something for you that you are trying to become pregnant or already are!

The same applies to medicines during fertility treatment: react as if you were (already) pregnant and ask the doctor who is prescribing the medicine whether you may take it during a pregnancy.

PREGNANCY AND SPORT

Sporty women who regularly used to train before they became pregnant, may in principle continue to follow their training schedule during the first three months of pregnancy.

For women who did not take part in sport before their pregnancy it is advisable to start a balanced fitness programme, preferably only in the fourth to sixth month of pregnancy.

The most important guidelines:

- listen to your body;
- drink sufficiently;
- wear comfortable clothing;
- avoid strenuous exercise in hot weather;
- avoid exercises lying on your back, in particular from the seventh month of pregnancy onwards;
- avoid contact sports (kick boxing, polo, hockey, etc.);
- avoid exercises with repetitive jumps and high-impact movements;
- avoid sports with a high risk of falling or impact injury, such as skiing, fighting sports, horse riding. Ball sports also constitute a moderate risk;
- due to the risk of shortage of oxygen, mountain climbing and deep sea diving are not advisable;
- movements with a low impact – walking, swimming, cycling – are preferable;
- adapt your diet: carbohydrates are important.

EVERYTHING OK?

HOW CAN YOU FOLLOW THE HEALTH OF YOUR BABY IN THE MAKING?

PRENATAL DIAGNOSIS

People who have become pregnant after medically assisted reproduction are often advised to undergo screening tests. But in spontaneous pregnancy prenatal diagnosis may also be indicated, e.g. if particular (hereditary) diseases appear in the family.
Of course prenatal checks consist in the first instance of the customary monitoring by your own gynaecologist, via ultrasound scans and possibly blood tests. However in particular situations it may be a good idea to also undergo an invasive prenatal investigation, such as chorionic villus sampling or CVS, amniocentesis or (exceptionally) an umbilical cord puncture.
In UZ Brussels such examinations are done in consultation with the Medical Genetics service (CMG) and they are performed in the Prenatal Medicine service.

Unfortunately no-one can guarantee that your baby will be healthy at birth. Prenatal checks only cover a number of abnormalities and give a better idea, but no absolute certainty.
After the diagnosis the CMG will not commit you to anything. The specialist geneticists are there purely to inform and support you. If for example chorionic villus sampling shows that the embryo has a severe abnormality, then you will be given information about the precise nature and consequences of that abnormality. But whether the pregnancy is interrupted or not, is completely up to you. Within what is legally allowed and medical responsible, we always respect your decision.

Who should have one of these tests?

Prenatal screening tests are recommended for:

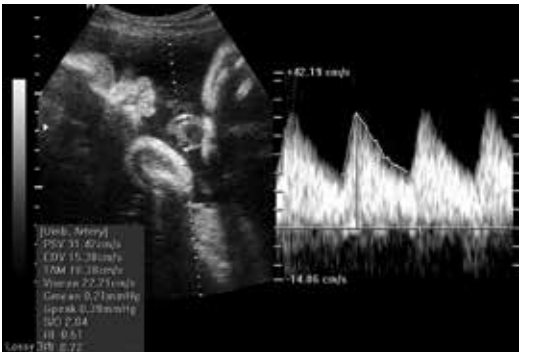
- all couples struggling with a known hereditary problem;
- couples in which the woman is 35 or older;
- couples in whom the fertilisation was brought about in the lab via ICSI, i.e. by injecting a sperm into the egg, with very poor quality sperm;
- couples who have undergone PGD treatment, i.e. in which the embryos were genetically investigated before they were replaced in the uterus;
- with the introduction of each new technique. A recent example is vitrification: a freezing technique that has recently made it possible to freeze oocytes.
  Although this technique has been used all over the world and has already led to the birth of many thousands of healthy babies, it is desirable to continue monitoring the possible risk to health, until we can say with certainty that the risk is not increased. Therefore we advise would-be parents who are pregnant after treatment with vitrified eggs – that is to say eggs that have first been frozen, then thawed and fertilised in vitro – have a close follow-up during pregnancy.

Does ICSI pose added risk?
Current (limited) data indicate that there is a moderate but significant risk for increase in birth defect, similar after IVF and ICSI, to a large extent due to parental characteristics, still corresponding to a low individual risk.

Echography

Ultrasound scans are used routinely to follow the developing pregnancy. At the same time they are used to check that the foetus does not display malformations.

An echography is a non-invasive and painless examination in which the uterus, the placenta and the foetus are imaged using sound waves.



This echography shows the foetus's heartbeat, measured via the umbilical artery.

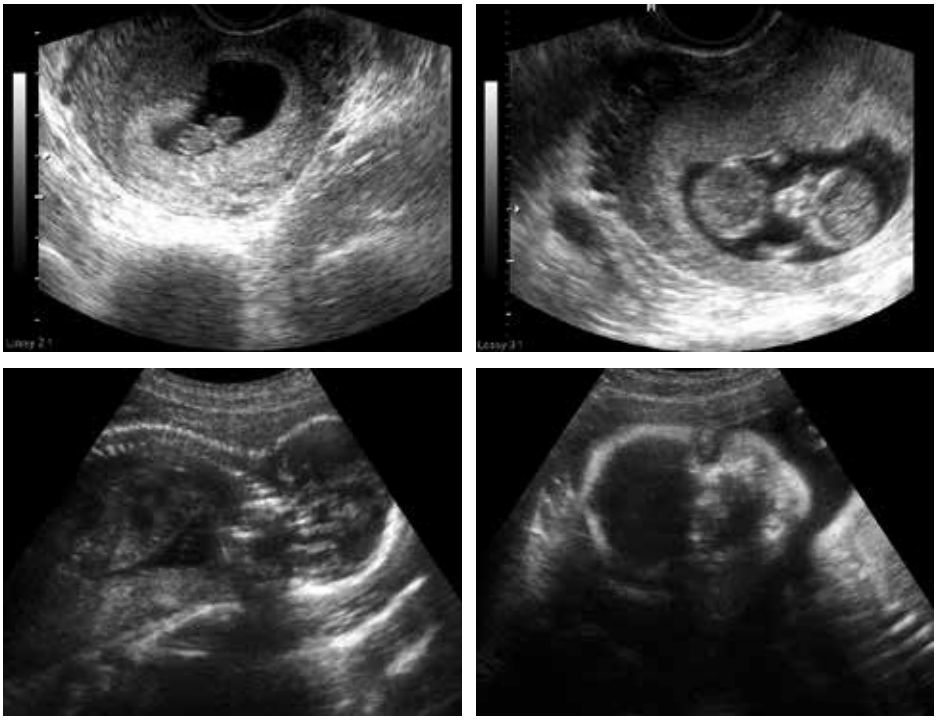
In the first three months this is generally still done with vaginal echography, via a probe in the vagina. It has a shape adapted to the vagina and for hygienic reasons is covered with a protective cover.

After the first three months the pregnancy is visualised with an abdominal scan, by moving a broader probe over the abdomen. A gel improves contact with the probe and thus also the quality of the image.

Echography is a completely safe examination: in responsible medical use no harmful consequences for the foetus have been observed to date.

If you have undergone fertility treatment in the CRG, the first pregnancy echography is done in week seven of your pregnancy, which is week five after the embryo transfer or the insemination. If you live in Belgium, that first echography will perhaps still be done via the CRG. If that is not the case, we will ask you to provide us with the results of the echography. That first scan forms the real start of our follow-up programme (see below).

Furthermore one echographic scan is performed every three months during pregnancy. These ultrasound scans are always reimbursed by the health insurance company for Belgian patients.



What are prenatal ultrasound scans intended to show?

Each echography serves a specific purpose.

- First scan – 10 to 14 weeks of pregnancy
  The crown to rump length of the foetus is measured. In case of a spontaneous pregnancy it serves to determine the duration of pregnancy accurately and based on that, to establish the expected delivery date. In the case of pregnancy after fertility treatment the exact date of the fertilisation is known, but even here the expected date of the birth is calculated on this basis.
- Second scan – 18 to 22 weeks of pregnancy
  Each part of the foetus' body is looked at thoroughly in order to detect a number of severe abnormalities. Nevertheless even a correct and complete echographic examination cannot guarantee that your baby does not display any abnormalities, because some of the conditions cannot be detected by ultrasound scans.

- Third scan –30 to 34 weeks of pregnancy
  Ultrasound check of the growth and the position of your baby, check of the position of the placenta, check of the quantity of amniotic fluid.

Screening for Down's syndrome (mongolism)

All pregnant women who have prenatal monitoring in UZ Brussels can choose between a variety of detection tests for Down's syndrome. This is also the case in most other hospitals.
Down's syndrome is the consequence of a genetic abnormality in which chromosome 21 is present three times in each cell, so it is also called trisomy 21.

What are the detection possibilities?

There are four prenatal options for Down's screening.

1. You opt for purely echographic follow-up

The most important scan for the detection of Down's syndrome is that of the first three months, in which the neck fold is measured. Each foetus displays a certain quantity of neck fluid. The greater the space behind the neck, the greater the chance that the foetus will display Down's syndrome. Nevertheless not all foetuses with increased neck oedema have abnormalities. This scan can only detect sixty percent of all foetuses with Down's.

This karyotype (chromosome map) shows three times chromosome 21 (trisomy-21)

2. You decide to have just a blood test

The blood analysis is performed between the ninth and thirteenth week of pregnancy. The risk of a foetus with Down's is determined by the concentration of two hormones (βhCG and PAPP-A). In this way we can detect 68% of foetuses with trisomy 21.

3. You opt for a combination test

In this screening your age is combined with the determination of the two above-mentioned hormones in the blood

- First three-month screening is performed between the eleventh and the thirteenth week of pregnancy. Based on the combination of the mother's age, the determination of the PAPP-A and -hCG hormones in her blood and the ultrasound measurement of neck oedema in the foetus, we can detect 85% of foetuses with Down's.
- For second three-month screening we do a triple test around the sixteenth week. In this we determine the level of three hormones in the mother's blood (alpha fetoprotein, βhCG and oestriol). In combination with the age of the mother we can detect sixty percent of all Down's foetuses this way.

  A positive test – i.e. a result that falls outside the normal range – does not mean a definite diagnosis of Down's syndrome. This requires additional tests, such as CVS or amniocentesis.

  A negative test – i.e. a result that falls within the normal boundaries – does not completely rule out the risk that you are pregnant with a foetus with trisomy 21, trisomy 18 or another chromosome abnormality.

4. You choose an invasive procedure

This option has the advantage that the diagnosis is certain. There are two possible investigational techniques: CVS and amniocentesis (see below).

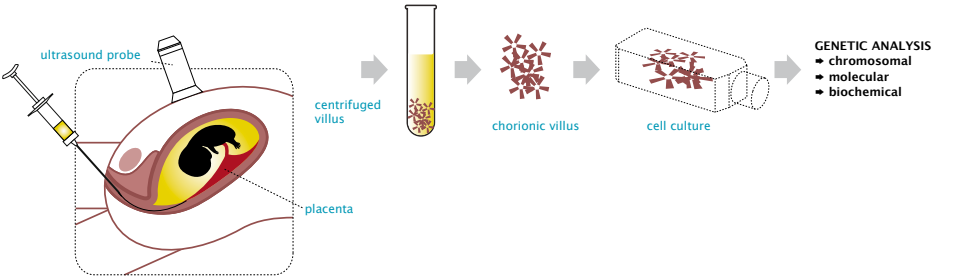
CVS

By CVS a small sample of tissue is removed from the placenta between the eleventh and thirteenth week of the pregnancy. For this we insert a narrow tube into the vagina as far as the placenta and we aspirate some tissue for closer examination. Sometimes we also use a needle to remove the tissue, which is carefully inserted through the abdominal wall. The intervention takes place under ultrasound control.

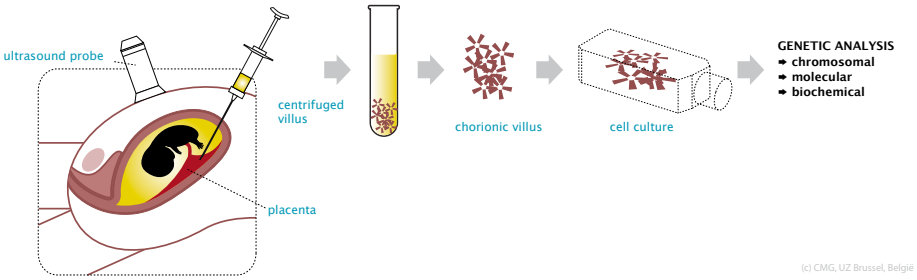
Doing this procedure entails a risk of miscarriage of approximately 1 in 200.

The advantage of CVS is that you usually have the definitive result before you are fourteen weeks pregnant. If the investigation makes a diagnosis of a chromosomal abnormality in the foetus, that offers the chance of taking a well-considered decision about whether or not to continue the pregnancy. If you want to terminate the pregnancy, curettage can be performed.

transcervical chorionic villus sampling



abdominal chorionic villus sampling



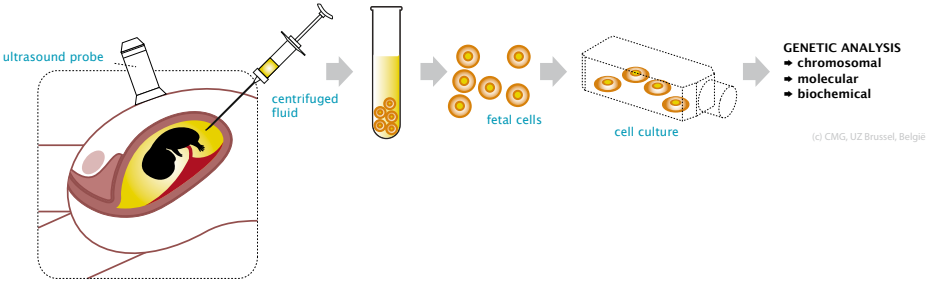
Amniocentesis

Amniocentesis can be performed from the fifteenth week of pregnancy. A very fine needle is inserted through the abdominal wall and some of the amniotic fluid in which the foetus is floating in the uterus is aspirated. Then both the amniotic fluid and the foetal cells – skin cells that have flaked off the foetus – that are found in it are examined.

The execution of this procedure entails a risk of a miscarriage of approximately 1 in 200. If the puncture is performed by a highly experienced gynaecologist that risk is reduced to 1 in 500.

Some days after the amniocentesis you learn the result for a limited number of abnormalities. The complete and definitive result follows about three weeks later. The biggest disadvantage of this procedure is therefore the long time for the results to be known. If a severe abnormality were to be diagnosed and you decided to terminate the pregnancy, curettage would no longer be possible. The pregnancy would have to be terminated by inducing contractions.

amniocentesis



Thoughtful choice

CVS is possible earlier (in the pregnancy) than amniocentesis, but the chance that the investigation elicits a miscarriage may be greater. Which test is preferable is considered carefully by the CMG doctors. In doing so of course we also take into account your opinion and wishes as would-be parent(s).

FOLLOWING UP PREGNANCIES THROUGH MEDICALLY ASSISTED REPRODUCTION

If your fertility treatment in the CRG has led to a pregnancy, you will continue to be monitored by your own gynaecologist. As we said before, we ask you if possible to get the week seven ultrasound scan done in the CRG. If that is not possible, then we ask you to make sure to give us the results of that first pregnancy scan.

Follow-up study

This is because that first scan marks the start of our follow-up study, an important finale to fertility treatment in the CRG. We are now no longer primarily concerned with your individual health or that of your baby, but with the health of anyone who will undergo fertility treatment in the future or who is born of it. If we are informed that you are pregnant, you will therefore receive two questionnaires from us. One about the early course of your pregnancy, in which you also record the results of the ultrasound scans (week seven, week twelve and week twenty). You will receive the second questionnaire at the end of your pregnancy and be asked how it went, up to and including the birth.

We understand very well that with the birth of a baby the treatment is successfully concluded as far as you are concerned. But actually, filling in these questionnaires is still part of it. Your gynaecologist can help you with it by the way.

The reason why we ask for this is twofold. In the first place, Belgian legislation imposes on us the obligation to record the number of pregnancies and children that are the result of our treatments. But that is actually a secondary consideration, because the CRG has always performed these follow-up studies, long before they were a legal requirement.

To us, surveying our patients forms part of the scientific research that we permanently conduct into the consequences of fertility treatments. Consequences for health, both physical and mental, consequences in the short and the long term, consequences for the mother, consequences for the children at the various stages of their development. One of the positive effects is that we can continually improve and refine our treatments, so that they are associated with ever less unpleasantness for the patients.

Therefore we ask you, just like our other patients, to return the completed questionnaires to us. By doing this you are not only contributing to scientific research and thus the quality of the treatment, but you are also helping future would-be parents. Perhaps you yourself will be one of them, one day.

Concerning your privacy you may rest assured: the processing of the questionnaires is completely anonymous. Third parties will never be able to trace back the information that you have provided to your identity as the patient.

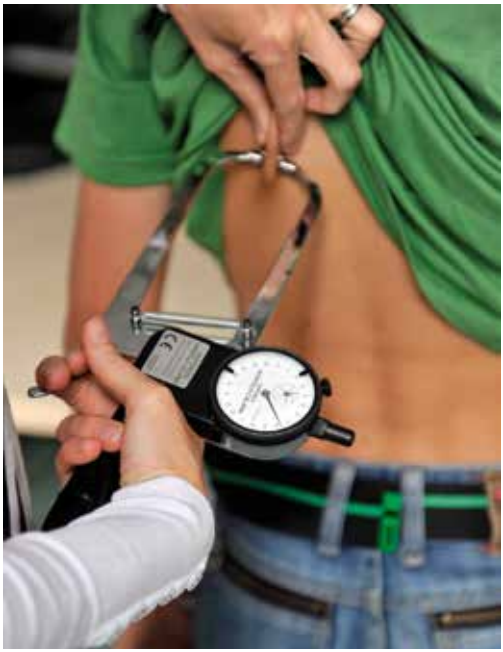
Inclusive postnatal follow-up

A specific point of attention for UZ Brussels and the CRG is the evaluation of each new scientific technique. Therefore we ask our patients who have had a baby after using such a 'new' technique to allow their child to be examined at two months and one year after birth.

Belgian patients can have that done by a specialist doctor from the CMG or UZ Brussels. For foreign patients – or of Belgian patients living far away – we ask you to have the examinations done by your own specialist (preferably a paediatrician) and to send us the results.

Why is a postnatal check necessary? Because some conditions may only come to light after the birth. Both for you (if you perhaps want another child) and for the child it is important that we try to find out if there are any abnormalities and how they came about: possibly due to hereditary factors, particular circumstances in the course of pregnancy, by accident, etc.

Moreover it is our scientific duty to consistently examine for each new technique whether it entails a greater chance of abnormalities. To date the results have always been reassuring, but research remains a condition for progress, now and in the future.



We have conducted a postnatal follow-up ever since the CRG started its fertility work in 1983. Consequently our database contains data from many thousands of children.

In the last decade we have mainly been focussing on new techniques. Thus we specifically follow up all children – right into adulthood as well as after that – who were born after the use of the ICSI technique (injection of a sperm into the egg) and – more recently – after the in-vitro fertilisation of eggs that were first frozen. We also systematically follow up postnatally babies born of parents who had PGD treatment. In PGD or pre-implantation genetic diagnosis, embryos are examined for their genes in the laboratory before being placed in the uterus. To do that we take one or two cells from a six- to eight-cell embryo. We examine PGD children – irrespective of the two months and one year examinations – a third time, around their second birthday.

At each introduction of a new technique we will monitor patients who become pregnant via that technique with increased attention and request that they have both prenatal and postnatal checks done.

Want to know more?

Many would-be parents considering fertility treatment ask similar questions. You can find the answers to frequently-asked questions at www.brusselsivf.be.

COLOFON

DISCLAIMER
This brochure contains crucial information for those who are facing difficulties in conceiving, as well as advice to improve your and your baby's health. This information is not intended to ignore the medical advice given to you by your treating physician. Specific queries regarding your health status should be addressed to your treating physician, more particularly when symptoms arise that need a specific diagnosis or medical treatment.

TEXT EDITING – LAYOUT – ILLUSTRATIONS & GRAPHICS – PRODUCTION

Magelaan cvba
Gent – België

PHOTOGRAPHY
UZ Brussel Centrum voor Reproductieve Geneeskunde,
UZ Brussel Centrum voor Medische Genetica,
Herman Tournaye,
Shutterstock

RESPONSIBLE PUBLISHER
Prof. Dr. H. Tournaye
Centrum voor Reproductieve Geneeskunde
Universitair Ziekenhuis Brussel
Laarbeeklaan 101, 1090 Brussel – België
www.crg.be

Date of publication: November 2015
Third, unrevised edition

What can you do yourself before and during fertility treatment to increase your chance of a child?
How can you contribute to the health of your baby if you are pregnant?
Is it best to get vaccinated for particular diseases, or not just now?
Which prenatal examinations can you get done?
Why is postnatal follow-up useful?

BRUSSELS HEALTH CAMPUS
Vrije Universiteit Brussel
Universitair Ziekenhuis Brussel
Centrum voor Reproductieve Geneeskunde