

How we can help you

Tommy's, the baby charity, publishes information for parents-to-be and for those who have experienced problems in pregnancy, such as miscarriage, stillbirth or premature birth, as well as providing information on toxoplasmosis. Please indicate below if you would like to be sent further information.

- Toxoplasmosis and pregnancy: everything you need to know
- Toxoplasmosis: a handbook for health professionals
- Toxoplasmosis and animals
- Toxoplasmosis: information about congenital toxoplasmosis
- Toxoplasmosis: information on symptomatic acquired toxoplasmosis
- Healthy pregnancy: a guide for parents-to-be
- When a baby dies: information for parents, for family and for friends
- Premature labour: information for parents
- Premature labour: information for midwives
- Information sheet on miscarriage
- Information sheet on stillbirth
- Information sheet on premature birth
- Information sheet on pre-eclampsia
- Information on ways to donate regularly to Tommy's
- Research update

Please complete your details below and return the form to Tommy's, the baby charity, Nicholas House, 3 Laurence Pountney Hill, London EC4R 0BB, or contact Tommy's on our pregnancy information line (0870 777 30 60) or e-mail: info@tommys.org

Your details	Name
Address	
Postcode	
Telephone	
Email	

Please tick this box if you do not wish to receive further mailings from Tommy's.

Toxoplasmosis

and pregnancy



Tommy's, the baby charity

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About Tommy's, the baby charity

Tommy's, the baby charity, aims to inform and educate all parents-to-be about health in pregnancy. By providing this information we hope to ensure that every pregnancy has the best possible chance of a healthy outcome and a healthy baby.

Tommy's was set up in 1992 with the goal of making pregnancy and childbirth safer for both the expectant mother and her child, by funding a national programme of medical research into miscarriage, stillbirth and premature birth.

Every parent-to-be hopes their baby will be born healthy but every year in the UK one in five pregnancies will end in miscarriage and around 4,000 babies will be stillborn. More than 100 babies are born too small or too soon every day and two percent are severely premature, arriving six weeks before their expected birthday. Premature birth is the most common cause of baby death and one in 10 premature babies will develop a permanent disability.

As the UK's leading baby charity we want to find the answers for parents who deserve to know why their baby died or had to fight for life after being born prematurely.

Tommy's is determined to find the causes of miscarriage, stillbirth and premature birth and to save tiny lives by discovering new ways to encourage healthy pregnancy and prevent problems. We support a nationwide programme of vital research and are already improving the chances of survival for hundreds of babies through our clinical trials. We are examining the processes underlying normal and premature labour, and are finding ways to identify women who are most at risk of giving birth prematurely. We are increasing understanding of conditions such as pre-eclampsia which endanger both mother and baby, and we are making progress in discovering ways to prevent health problems in premature and low birth-weight babies.

Tommy's also provides information about pregnancy health issues for health professionals, parents and parents-to-be. We aim to ensure that information on health in pregnancy and reducing the risks of problems is available to all parents-to-be in the UK, thereby reducing the number of babies' lives lost.

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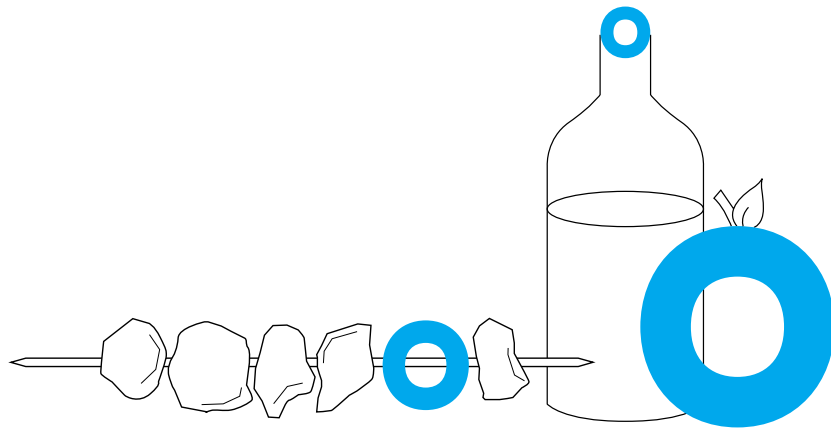
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What is toxoplasmosis?

Toxoplasmosis is an infection caused by the parasite *Toxoplasma gondii*, a microscopic single cell organism that can be found in meat, cat faeces, the soil where cats defecate, and unpasteurised goats' milk. The parasite can infect most birds and warm-blooded animals, including humans.

Cats are the only animals that can have infected faeces. The organism completes its sexual cycle in the gut of members of the cat family. Following infection through eating birds, mice or other raw meat, a cat can shed infectious faeces for about 14 days. A healthy cat will not normally be a source of infection again. Sick cats may re-shed infected faeces.



How is it caught?

Toxoplasmosis is caught by eating anything infected with or contaminated by the parasite. This could be:

- raw or undercooked meat, (i.e. meat showing any traces of pink or blood), and including raw cured meat e.g. Parma ham, salami
- unwashed vegetables and fruit
- cat faeces and soil contaminated with cat faeces
- unpasteurised goats' milk and dairy products made from it.

Humans may become infected by any of the following routes:

- eating the organism in soil or water which has been contaminated with cat faeces
- eating the organism in raw or undercooked meat from infected animals (e.g. cows or sheep)
- drinking unpasteurised milk from infected goats
- transmission of the organism across the placenta after maternal infection
- transmission of the organism from infected matter entering human body fluids, if, for example during the process of lambing material splashes into eyes, or open cuts
- transmission of the organism from transplanted organs or blood products from other humans with acute or latent toxoplasmosis
- inhalation of sporulated oocysts (this is possible but very unusual).

Person-to-person infection is not possible, except from mother to unborn child.

Infection is followed by the replication of the parasite in the blood and the invasion of organs and tissue. The incubation period is 5–23 days.

Who is at risk?

Anyone who eats anything infected with the organism is at risk of catching the infection. Some women may be at increased risk due to the job they do such as catering, working on the land or farming. Lambing is a particular risk for pregnant women.

What are the effects of toxoplasmosis?

Toxoplasmosis does not usually cause any symptoms and in most cases a person does not realise they have caught the infection. It can cause symptoms like flu or sometimes an unpleasant illness similar to glandular fever. Once a person has had the disease they are generally thought to be protected for life, unless they suffer an impairment of their immune system.

Toxoplasmosis can be dangerous to humans if their immune system is underdeveloped or compromised, as in the case of an unborn baby, somebody with HIV/AIDS or on immuno-suppressant drugs. In such cases, the immune system is unable to restrict the spread of the parasite, which can then cause damage.

Occasionally in the healthy adult or child, toxoplasmosis causes a prolonged and debilitating illness similar to glandular fever or ME. This condition is called acute acquired toxoplasmosis. Diagnosis is by a blood test, and the condition is sometimes treated with antibiotics. It is thought that in about 1% of these cases some damage to the eyes will occur.

Toxoplasmosis is only a risk to an unborn baby if caught for the first time during pregnancy or within 2–3 months prior to conception. This condition is called congenital toxoplasmosis. The degree of risk to the fetus and the damage caused depends on when in pregnancy the mother acquired the infection.

What are the effects of toxoplasmosis during pregnancy?

If a woman catches toxoplasmosis for the first time during pregnancy, it does not necessarily mean that her baby will be infected. On average, only 4 in 10 such infections will pass to the unborn baby. Toxoplasmosis may cause damage to the unborn baby if caught by the mother during pregnancy. It can cause:

- miscarriage
- stillbirth
- damage to the baby's brain and other organs, particularly the eyes.

However, most babies born with toxoplasmosis have no obvious damage at birth but develop symptoms, usually eye damage, during childhood or even adulthood. A few will have more serious symptoms such as blindness or brain damage.

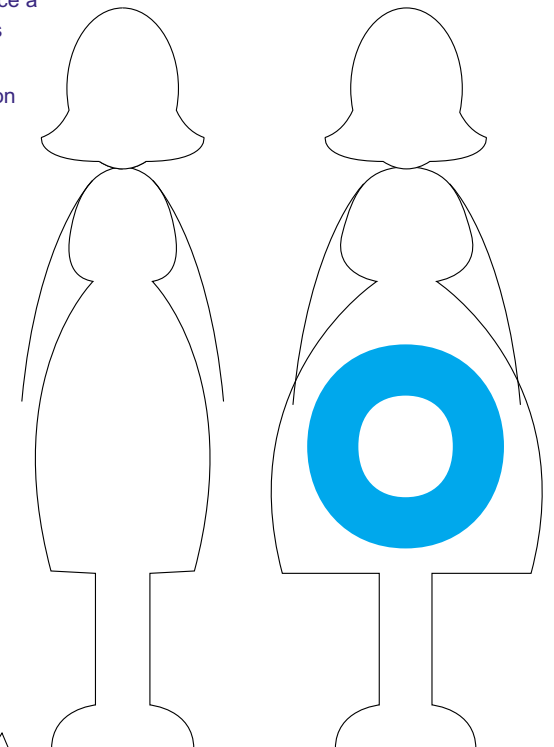
How would I know if I had it?

The toxoplasmosis infection doesn't usually cause any major problems in healthy adults, and in most cases a person doesn't realise they've ever had it. It isn't usually dangerous or serious and just causes minor flu-like symptoms. In more severe cases it can cause an unpleasant illness similar to glandular fever.

What we know

Some facts and figures:

- up to half the UK population will have the infection at some time in their lives
- it's generally accepted that once a person has had toxoplasmosis they are immune for life
- a blood test can detect infection with *Toxoplasma*.



Blood tests

The toxoplasmosis blood test involves taking blood from the mother, leaving the baby unaffected. The blood tests look for antibodies to *Toxoplasma*. These antibodies are produced by the body to fight the toxoplasma infection.

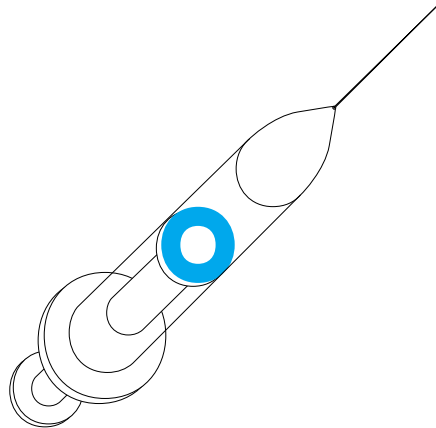
Depending on what type of antibodies are found, and whether levels are rising, falling or stable, an estimate of the time of onset of infection can be made. Local laboratories may refer blood to the Toxoplasma Reference Laboratory to carry out these tests.

Who might have a blood test?

You might consider having a blood test for toxoplasmosis if, for example:

- you think you might have put yourself at risk of catching toxoplasmosis (for example eating raw meat or meat that has not been cooked thoroughly)
- you are concerned about symptoms (which can sometimes be a bit like flu)
- you would like to know if you have developed immunity to *Toxoplasma* or not before you get pregnant.

If you feel you may have put yourself at risk in pregnancy or would like to know your antibody status prior to pregnancy, you should discuss the benefits and problems of testing with your GP, midwife or obstetrician. If it is decided that it is necessary, a blood test will be taken.



When is a blood test conducted?

Blood tests for toxoplasmosis can be done at any stage before or during pregnancy. The blood test can only show possible infection 23 days after any possible risk incident as it can take this long for antibodies to be detectable. This means that it may be necessary to wait for 23 days after a possible risk before having a blood test.

The blood test procedure

The blood test involves taking a small amount of blood from the mother. There is therefore no risk to the unborn baby.

The blood test aims to show whether antibodies indicative of toxoplasmosis are present or not, and if they are present to determine whether they are to a current or a previous infection.

There are 3 possible outcomes to the blood test:

1. Not immune

No antibodies are present so the blood test result is negative and shows that no exposure to toxoplasmosis has been experienced. This means that the person is not immune, so may need to take precautions to avoid infection both before conception and throughout pregnancy.

2. Positive due to immunity

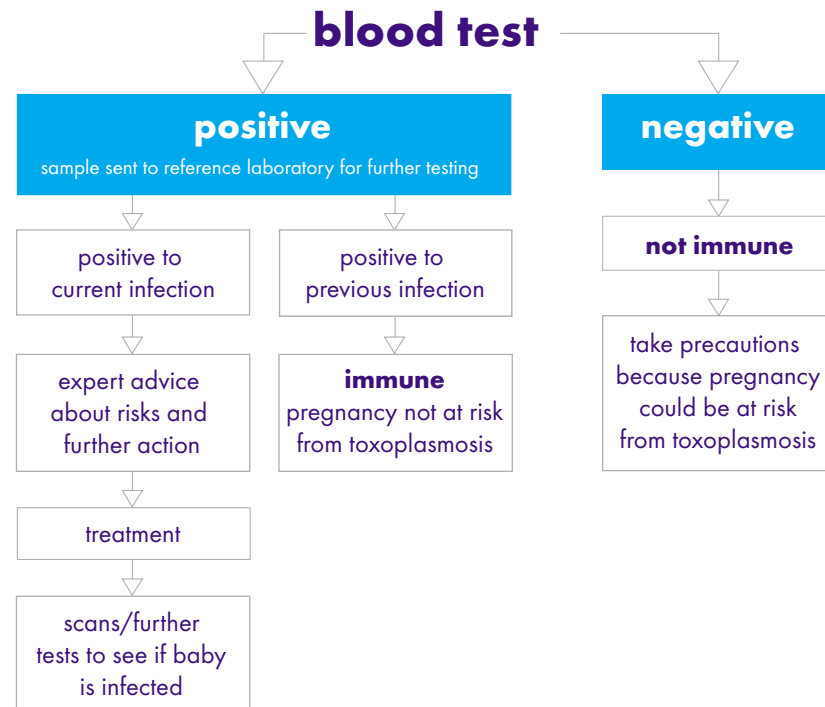
Antibodies are present in the blood, so the blood test result is positive. Further tests can show whether the positive result is for a current or past infection. It is generally accepted that once a person has had toxoplasmosis they are immune and protected for all future pregnancies unless their immune system is damaged (e.g. by HIV infection).

3. Positive due to a current infection

Antibodies are present in the blood, so the blood test result is positive again. If further tests show that the positive result is for a current infection, it means the person is currently suffering from an acute toxoplasma infection and that further action needs to be taken to assess the risk of passing the infection on to the unborn child.



Blood test procedure flow chart



Results

How long does it take to receive the blood test results?

It may take only one week to get the blood test results, but if the sample has been sent from a local hospital laboratory to a reference laboratory it will take longer. If the blood test results take an unacceptably long time to be returned, then the GP or obstetrician may ring the laboratory to get the results. Relaying results back to local hospitals can cause delays.

How do I know what the test results mean?

If there is any uncertainty about what the blood test results mean, an obstetrician or GP can contact the laboratory who did the test for clarification. The obstetrician or GP will make a recommendation about any further action that might be required, e.g. treatment with antibiotics, or further testing.

What does a negative test result mean?

A negative result means that the patient has never had toxoplasmosis, is not immune, and needs to take precautions to avoid infection before conceiving and throughout pregnancy.

What does a positive test result mean?

A positive result means that the patient has had toxoplasmosis at some time in their life. Up to one in three pregnant women will have a positive result because they have contracted toxoplasmosis in the past. The tests are very sensitive so a small percentage of tests will appear positive when they are not. If the test is positive, the blood must be sent on from the local laboratory to the Toxoplasma Reference Laboratory, for confirmation of results and further testing.

How can they tell if the infection is current or past?

Further tests will be carried out to estimate when the infection was caught and whether there is any risk of infection for the baby. These tests look at the types of antibodies that are present in the blood sample and at what levels these are; from this they can tell whether the infection is past or current. The Toxoplasma Reference Laboratory send the results to the woman's carers, who then pass information about the result to the patient.

It is important for a woman who has been told that she has a positive result to know that this does not necessarily mean that her baby is at risk. If the infection was in the past, then she should be immune and her baby protected.

What if it is a current/recent infection?

If the tests show that the infection is current or recent, there is a risk that the baby will be infected. It is thought that it takes around 4–10 weeks for the infection to pass from a mother to her baby. The degree of risk and severity of damage depends on when the woman was infected with toxoplasmosis.

Toxoplasmosis in pregnancy and fetal damage

i) Shortly before conception (within 2–3 months)

Infection shortly before conception carries a 1% risk or below of transmission to the fetus, but a high risk of miscarriage if the fetus does become infected.

ii) The first trimester

Risk of transmission to the fetus if the infection is caught by the mother at this stage of pregnancy is about 15%. A fetus infected at this stage has a high risk of being miscarried or born with severe symptoms such as hydrocephalus (water on the brain), calcifications of the brain, or retinochoroiditis (inflammation of the retina).

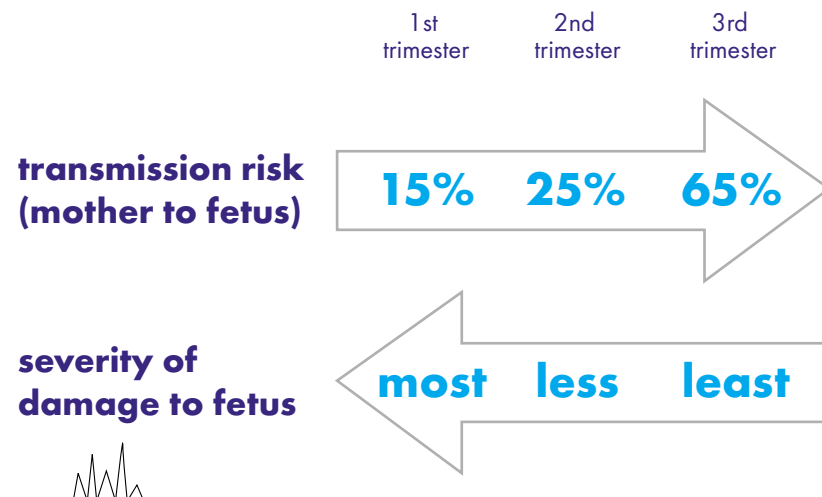
iii) The second trimester

Risk of transmission to the fetus if the infection is caught by the mother at this stage of pregnancy is about 25%. A fetus infected at this stage is less likely to be miscarried but is still at risk of developing severe symptoms as above.

iv) The third trimester

Risk of fetal infection rises again if the mother catches toxoplasmosis at this stage of pregnancy, and may be as high as 65%. Most babies infected will be apparently healthy at birth, but a large proportion will develop symptoms later in life, usually eye damage.

Risk of infection and severity of damage



Is it possible to find out if the baby has been infected?

Further tests can be carried out to find out whether or not the baby is infected, although the tests will not show how severe the damage is. An obstetrician or GP can explain the risks and benefits of conducting these tests for individual cases.

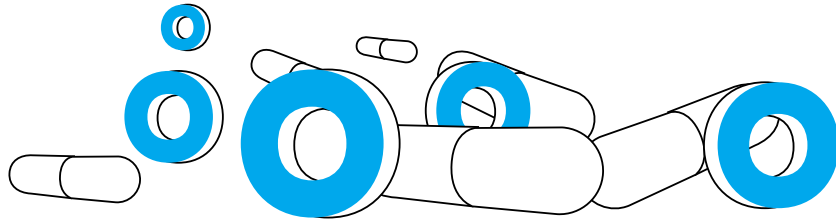
Amniocentesis is a technique where amniotic fluid is removed by a fine needle from the amniotic sac – the fluid filled sac around the baby.

Cordocentesis is a technique where a sample of the baby's blood is removed from the umbilical cord.

These procedures carry a 0.5–1% risk of causing miscarriage. They would only be carried out for toxoplasmosis if a recent or current infection in pregnancy had been diagnosed by a previous blood test on the mother. They are normally carried out after 15 weeks of pregnancy. The amniotic fluid or blood from the umbilical cord is then tested at the Toxoplasma Reference Laboratory using a range of specialised tests which may include:

- A test to look for the parasite's DNA. If this is positive then the baby will be considered to be infected.
Timescale: results may take 1–3 days
- Using the blood or amniotic fluid sample to grow the parasite, which is called a culture.
Timescale: results will take several weeks
- Tests looking for antibodies to toxoplasmosis.
Timescale: results may take 1–3 days

A detailed ultrasound scan will show if there is major damage, such as hydrocephalus, (water on the brain), but a scan which shows no damage, whilst reassuring, does not rule out the possibility that the baby is both infected and affected.



Options for treatment

If the mother has a positive blood test result, she may be prescribed an antibiotic called spiramycin which reduces the risk of the infection being passed from the mother to the baby. This is normally used to treat toxoplasmosis in pregnancy. Spiramycin is available in the UK on a named patient basis, which means that any doctor can prescribe the drug, but it will not be readily available at the hospital dispensary or local chemist shop. Your pharmacist may get it from the manufacturers, or more likely the distribution company.

Spiramycin only reduces the risk of transmission from mother to baby and is not active against the parasite. It therefore cannot limit any damage if a baby has already become infected.

If the baby is found to be infected, a combination of pyrimethamine and sulphadiazine can be taken. These are both stronger antibiotics and help limit any damage to the baby, although again, they cannot undo any damage.

Side effects of treatments

Spiramycin is used routinely in France for treatment of toxoplasmosis in pregnancy with little evidence of adverse effects. Experts consider that it is safe to use in pregnancy when a baby is at risk. Women taking spiramycin sometimes experience side effects such as nausea or rashes.

Pyrimethamine and sulphadiazine can have side effects for both the mother and baby related to red blood cell production. Although not normally prescribed in pregnancy, they can be used in extreme circumstances. They are taken with folic acid which helps to reduce the worst side effects.

Testing a baby for congenital toxoplasmosis after birth

All babies born to women who have had a recent or current infection in pregnancy should be given a thorough physical examination after birth and followed up with blood tests during the first year of life.

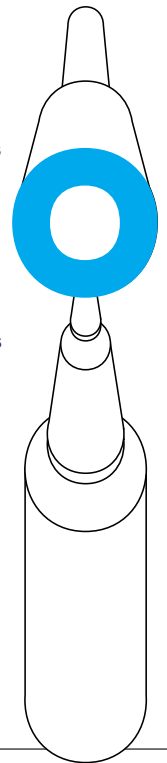
Taking a blood sample

A blood sample should be taken from at risk babies shortly after birth. Sometimes this is taken from the umbilical cord, and although this method involves no pain for the baby, it may not give a good sample as it could be contaminated with the mother's blood. To get more accurate results, even though nobody likes to cause distress to a baby, it is best if the blood is taken from the baby either by heel prick or from a vein. A blood sample should also be taken from the mother to compare levels of specific antibodies between mother and baby.

Tests will be carried out to look for different types of antibodies to toxoplasmosis in the baby's blood. The baby carries some of the mother's antibodies, so a positive result is expected and not necessarily alarming. If additional antibodies are present this may indicate that the baby is infected (except in cases of placental trauma where the presence of additional antibodies would be expected).

Other checks/examinations

Babies who are known to be at risk of having congenital toxoplasmosis should be checked for signs of neurological damage including head circumference. The eyes will be examined for signs of any problem, preferably by an ophthalmologist who will put drops into the eyes to enlarge the pupils to give a better view of the back of the eye. The general health of the baby will also be checked. If there was any possibility that the baby had brain damage, special head X-rays might be carried out to check for calcifications, enlarged ventricles or any other abnormalities. Long-term follow-up by an ophthalmologist might be necessary if eye damage was confirmed.



How to avoid catching toxoplasmosis

What happens if a baby is infected?

If blood tests showed that the baby was infected, antibiotics might be given even if he or she showed no symptoms. Treatment can sometimes be continued for as long as one year, to help prevent or limit the eye damage that can occur later.

Further tests/examinations

A blood sample taken every two months, up to the age of one year, can show whether the baby's antibody level is falling. The level should be completely negative by the time the baby is about one year old. This means that the baby has lost the antibodies acquired from the mother and is not congenitally infected. When the baby's blood sample is completely antibody-negative then the baby is definitely not congenitally infected. A falling antibody level is a good sign, but is not conclusive and tests should continue until the antibody level is completely negative.

Can breastfeeding affect whether a baby becomes infected?

The *Toxoplasma* organism has never been found in human milk, so there is no risk of passing this infection on through breastfeeding. If you do decide to breastfeed, your baby will have the advantage of getting extra antibodies from your milk, which would be especially helpful if he or she were infected.

Avoiding toxoplasmosis
only eat meat which has been thoroughly cooked (i.e. with no trace of blood or pinkness)
avoid raw cured meat, like Parma ham
wash hands, chopping boards and utensils thoroughly after preparing raw meat
wash all fruit and vegetables thoroughly to remove all traces of soil
don't drink unpasteurised goats' milk or eat dairy products made from it
wear gloves when gardening and wash hands and gloves afterward – if you eat while gardening wash your hands first, and try to avoid gardening in areas which may have been soiled with cat faeces
cover children's sandpits to prevent cats using them as litter boxes
remove faeces from cat litter tray every day wearing rubber gloves and wash gloves and hands afterwards – or have someone else do this
do not handle lambing ewes and do not bring lambs into the house.
Cats are the only animals that can shed this parasite in their faeces. Provided precautions are taken, cats are not a particular risk to a pregnant woman. Like human adults, cats can sometimes, but not always, become sick when infected with the toxoplasmosis infection, so care of a sick cat should be left to someone else.

