



INFORMATION BOOKLET FOR MATERNITY



SEPSIS *is*

A life-threatening condition triggered by infection

It is a rare but important diagnosis during and 42 days after pregnancy, because pregnancy affects the body's ability to respond to infection leading to an increased risk of sepsis

Whilst most women do not suffer from infection or sepsis during or after pregnancy, sepsis, if it occurs, is best treated when recognised early



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Tús Áite do
Shábháilteacht **1** Othar
Patient Safety **1** First

**NATIONAL
CLINICAL
EFFECTIVENESS
COMMITTEE**

What is sepsis?

Pregnant women are generally young, healthy and well-nourished which are all factors that help fight off infection and prevent sepsis. If sepsis does occur it can be treated most effectively if recognised early.

To diagnose sepsis, the person must have an infection that has led to the function of one or more organs being affected (see sepsis checklist). These symptoms can be caused by other conditions too, so while sepsis can be suspected it requires a medical review and blood tests with other investigations to be confirmed.

How common is SEPSIS?

In 2016, there were 63,897 live births in Ireland, and 9,550 maternity patients (period from conception to 42 days post-birth or miscarriage) were either admitted to hospital with an infection or diagnosed with an infection as an in-patient. 416 were diagnosed with sepsis, so it is a relatively uncommon but serious condition.

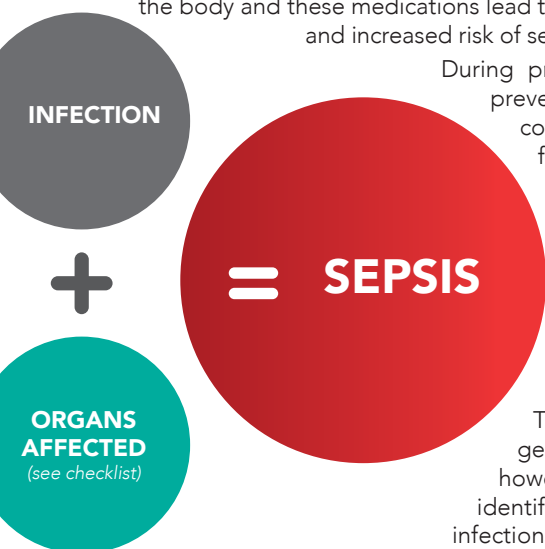
Who is at risk?

The immune system is designed to identify and destroy bacteria, viruses and other bugs in areas that should be sterile.

Many medicines and treatments can affect the immune system and patients on these treatments need to be aware they are at increased risk of sepsis and to watch out for the symptoms and signs.

Materials that are not a normal part of the body such as medical tubes and catheters are designed to have as little impact as possible, but if they become infected the immune system has real difficulty in clearing the infection as the normal repair mechanisms do not work on artificial materials, this also includes materials that have been used to surgically repair damaged parts or any other material that has been inserted into the body.

Transplanted organs require immune damping medications to prevent 'rejection' by the body and these medications lead to an abnormal immune response to infection and increased risk of sepsis.



During pregnancy the immune system changes to prevent the fetus, which is developing from a combination of the mother and father's DNA, from being identified as 'not a usual part of the body'. These changes mean that the immune system during pregnancy is not as good at fighting off infection. In particular, the pregnant immune system is not as good at fighting off viral infections and this is why pregnant women are at particular risk during seasonal flu outbreaks and some suffered badly during the 'bird-flu' outbreak.

The fact that women who get pregnant are, in general, young and healthy is protective, however, there are factors that have been identified that are associated with increased risk of infection and sepsis. These can be divided into two groups:

Risk factors

Pregnancy related risk factors

Do you have any of these?

Cerclage	Having a stitch put in the cervix to prevent miscarriage during this pregnancy.
Pre-term/prolonged rupture of membranes	If the 'waters' have broken either early or for longer than 24 hours infection can develop with symptoms of pain, a bad smell, and you may begin to feel unwell.
Retained products	Sometimes part of the placenta or membranes remains inside the womb after delivery, leading to increased bleeding and infection with pain and a bad smell.
History of pelvic infection	That has been diagnosed and treated during this pregnancy.
Recent amniocentesis	This is a procedure to take a sample of fluid from around the fetus during this pregnancy.
Group A Streptococcal infection in close contact	This means diagnosed in someone living in close contact with you or someone you have recently been in close contact with.

Non-pregnancy related risk factors

Do any of these apply to you?

Age > 35	Whilst pregnancy is normal and not a medical condition, it does involve a lot of changes in how the body works and the ability to adapt is affected as you get older. This is impacted by your general health.
Minority ethnic group	Due to language differences, cultural miscommunications, misunderstandings and other factors women in minority groups have increased risk for complications.
Vulnerable socio-economic background	Due to difficulties in accessing medical care, limited prenatal and antenatal care, poor nutritional and general health status and other factors, women in vulnerable circumstances have increased risk of complications.
Obesity	In particular an increased risk of wound and other skin infections due to the moist, warm environment of skin folds.
Diabetes	High sugar levels in the blood are well liked by bugs and diabetes can also affect the blood supply to the skin and organs, which also leads to an increased risk of infection.
Recent surgery (< 6 weeks)	Having an operation affects immune system function as well as leading to a wound that could get infected.
Immunocompromised	Some medicines affect the function of the immune system and thus increase infection and sepsis risk. These side effects are listed in the information leaflet that comes with your medication. If you take long-term medications read the leaflet and ask your pharmacist if you have any further questions.
Chronic kidney disease Chronic heart disease Chronic liver disease Chronic lung disease	Diagnosed before this pregnancy

All women need to pay close attention to infection prevention, particularly if any of these risks apply to you and if you develop an infection seek early medical advice if you develop any of the signs or symptoms of sepsis.

Signs & symptoms of infection

Infections are often suspected when a person develops a temperature and feels unwell. A high temperature is $> 38^{\circ}\text{C}$. A low temperature, $< 36^{\circ}\text{C}$, is also of concern but do check your technique.




Watch out for loved ones who have taken paracetamol as that may lower the temperature but does not treat any underlying infection.

Infection causes a combination of non-specific and local signs and symptoms depending on where the infection is in the body.


Non Specific signs and symptoms of infection

- Temperature $> 38^{\circ}\text{C}$ or $< 36^{\circ}\text{C}$
- Rigors (severe uncontrollable shivering)
- Fatigue
- Loss of appetite
- Muscle and joint pain
- Vomiting and diarrhoea










Specific infections related to pregnancy

Breast infection (i.e. mastitis)	 <p>Your breast may be painful and/or warm to the touch. There may be an area of swelling on your breast. Areas of your breast may look red, often in a wedge-shaped pattern.</p> <p>You may also be feeling generally unwell and experience pain or a burning sensation which may occur during breastfeeding, or at any other time.</p>
Womb infection (i.e. chorioamnionitis)	 <p>Tummy or lower tummy pain that is not relieved by pain killers or requiring more pain killers than you are used to taking. You may have stinky blood loss on your pad. You may experience heavy bleeding again that had previously been easing off.</p> <p>You may also be feeling unwell (see non-specific signs and symptoms).</p>
Wound infection following a caesarean section or where you had stitches.	 <p>Around the caesarean section wound may feel hot and painful and look red and swollen. There may or may not be pus.</p> <p>You may also be feeling unwell with non-specific signs and symptoms.</p>

Specific infections related to pregnancy continued

Genital tract infection	 <p>You may experience inflammation and irritation and vaginal discharge in the birth canal or irritation on the skin of the labia. If you have a pelvic infection you may experience pain lower in your tummy and/or back and may have a vaginal discharge. You may also have a temperature and feel unwell.</p>
-------------------------	--

Local signs and symptoms

Respiratory tract / lung infection	 <p>Cough with or without green sputum and you may or may not be breathless.</p>
Abdominal Infection	 <p>Unexplained abdominal (tummy) pain with or without a swollen tummy. You may have worse pain when your tummy is pressed.</p>
Urinary tract infection	 <p>Burning sensation on passing urine with intense urge, flank (side) pain may be present.</p>
Genital tract infection	 <p>Lower tummy discomfort or pain with or without stinky discharge.</p>
Skin	 <p>Pain, swelling, redness and hot to touch. There may be a pus or fluid ooze.</p>
Bones and joints	 <p>Pain, swelling, redness and hot to touch. There may be a pus, fluid ooze or stiffness.</p>
Brain & meningitis	 <p>Severe headache, neck stiffness, not able to tolerate bright lights. You may or may not have a rash. You may or may not be agitated or confused.</p>
Device related (applies to materials in the body that are not a normal part of it e.g. medical tubes or metal work)	 <p>Pain, swelling, redness and hot to touch in the area of the device. There may be a pus or fluid ooze. Examples are a cannula in your vein (for fluids or medicine like antibiotics), or a catheter (tube in your bladder to drain urine) which can cause infection. A cannula in your vein may cause redness, swelling and pain and/or pus at the point of entry to the vein. The catheter may cause a urinary tract infection (see above).</p>
Blood stream infection or blood poisoning	 <p>Severe nonspecific signs.</p>

Infection and Sepsis Prevention

Our bodies are very well designed and have multiple layers of defense against infection.

To work well all of these must be in good working order. Not all bugs cause infection and bugs in the right place are essential for our body to be healthy. We have bugs on our skin and our digestive system that not only help keep us well but also ensure that our immune system is working well and that we are getting essential vitamins and minerals.

The skin and mucous membranes:

Intact skin and mucous membranes (the lining of our mouth, lungs and gut) act as a physical barrier to prevent bugs from getting into our body. Friendly bugs on the skin are normal and keep the numbers of bad bugs down.

Good sanitation:

Clean water to drink and clean toilet facilities get rid of contaminated waste and prevent clean areas from being contaminated.

Exposure:

Have any close contacts been very sick recently with similar symptoms? Has your loved one had a recent operation or infection? Are they known to carry a multi-drug resistant bacteria (or Group B strep)? Have they recently travelled to tropical areas or to an area with an outbreak? If you come in contact with childhood illnesses such as chicken pox, measles, parvovirus (slapped cheek) while pregnant and if you are not vaccinated or have not had these illnesses yourself, contact your GP or midwife immediately.

Avoid handling raw meat, soil, sand or cat litter or use gloves when handling these to avoid Toxoplasmosis which may be harmful to your baby. See www.hpsc.ie.

Food hygiene:

Avoid deli meats, prepared dairy based dressings, raw milk, soft cheeses, pâtés and smoked fish. All these can cause Listeriosis. Cook food thoroughly, especially meat, ensuring that it is cooked through to the middle. Wash salads, fruit and raw vegetables thoroughly before eating to prevent Listeriosis and Toxoplasmosis. For further information see www.hpsc.ie

Good hygiene:

Keeping our environment and ourselves clean. Not with disinfectant sprays but using soap and water to keep the total number of bugs down and to get rid of things like food stains that bugs can thrive on. In hospital it is different, because of the nature of the work, there are many more infection causing bugs in the hospital environment so in hospital alcohol gels and other disinfectants may have to be used.

Breastfeeding:





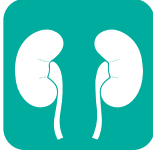


When a baby is born his or her immune system is not fully functioning and hasn't been exposed to the bugs in the environment. At birth, the baby gets exposed to Mum's bugs as he or she is delivered and cuddled. This is important so that baby can be exposed to a nice healthy diverse population of bugs for his or her skin and digestive tract. Breast milk contains cells and proteins from the mothers' immune system that can be used by baby to fight infections. Immune cells and proteins are also transferred across the placenta before birth and these give some protection too. Because of their immature immune systems babies are at increased risk of infection and indeed sepsis.

Vaccination or immunization:

Vaccination is a method of stimulating the immune system to recognise and destroy dangerous bugs. It works with the body's own natural defenses and it only identifies the dangerous bugs. This is different from using antibiotics where both good bugs and bad get killed and the body's natural balance may be put out of order. Having a healthy natural balance of bugs is important for healthy living.

Sepsis Checklist:

If your loved one has an infection do the following checklist. If you tick any of these, this is a sign of organ malfunction.

Tick if applies	Part of the body affected	 Consider
<input type="checkbox"/>	Brain 	Are they acting themselves? Abnormality can range from mild agitation or confusion all the way to a coma. Are they too sick to communicate?
<input type="checkbox"/>	Breathing 	Is their breathing pattern very fast and laboured, for instance can they finish a sentence without a pause? Are their lips blue-tinged?
<input type="checkbox"/>	Circulation 	Is their heart racing very fast and are their hands and feet cold, clammy and pale? Do they get very dizzy when they try to stand or even sit up?
<input type="checkbox"/>	Kidneys 	Have they passed no urine in the past 12 hours and do not feel the need to go?
<input type="checkbox"/>	Clotting 	Do they have a new rash that does not disappear when pressed on by your finger or when a glass is rolled over it (glass test)?
<input type="checkbox"/>	Functional status 	Do they have a change in behaviour or performance? In some people with intellectual and/or physical disabilities it can be difficult to recognise these changes if you don't know them well. Young people may have severe leg pain and difficulty standing.

COULD THIS BE SEPSIS?

If your loved one has an infection,
look for the signs of sepsis on the checklist.

Infection



= SEPSIS

**Organ
Malfunction**



WHAT TO DO

If any of the signs of sepsis (see checklist) are present or you are worried your loved one is getting worse:

- Get urgent medical assistance (GP, Midwife, Maternity Unit, Out of hours service, Local Emergency Department).
- Tell them the part of the body that is abnormal from your checklist and ask -

COULD THIS BE SEPSIS?

REMEMBER

Suspect SEPSIS – seek urgent medical advice



Feidhmeannacht na Seirbhíse Sláinte
Health Service Executive

Clinical Strategy and Programme Division

For more information visit:
www.hse.ie/sepsis