Reducing your risk of ovarian cancer

A guide to risk-reducing salpingo-oophorectomy (RRSO)

Contents

About this information

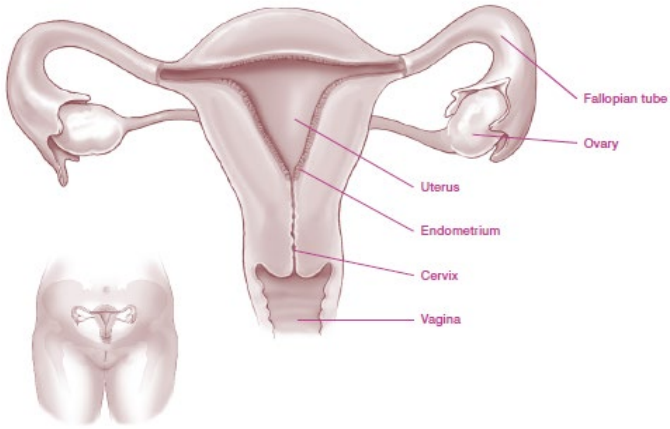
This information is for people who are at high risk of ovarian cancer. This includes people with certain gene changes passed down in their family, like BRCA1, BRCA2, PALB2 or BRIP1Ag.

It describes a surgery called Risk-reducing salpingo-oophorectomy or RRSO. It explains when the surgery is recommended, what it involves and how to manage the effects of surgery.

What is risk-reducing salpingo-oophorectomy (RRSO)?

RRSO is surgery to remove both fallopian tubes (salpingectomy) and both ovaries (oophorectomy) to reduce your risk of ovarian cancer.

RRSO does not usually include removing the uterus, cervix or vagina. Removing the uterus and cervix is called a hysterectomy.



Female reproductive system

When is RRSO recommended?

RRSO is recommended if you have gene changes that raise your risk of ovarian cancer.

This is sometimes called a gene mutation. Most people at high risk of ovarian cancer carry the BRCA1, BRCA2, PALB2 or BRIP1Ag gene mutation. However, other gene mutations, such as those causing Lynch syndrome, can also increase the risk of ovarian cancer.

The age doctors recommend RRSO depends on:

- the gene mutation you have
- your family medical history
- whether you or your family members have had cancer.

35 to 40 years

If you have the BRCA1 gene mutation, doctors recommend RRSO between 35 to 40 years of age.

40 to 45 years

If you have the BRCA2 gene mutation, doctors recommend RRSO between 40 to 45 years of age.

Some gene mutations also increase the risks of other cancers. For example, BRCA gene mutations increase the risk of breast cancer. Lynch syndrome can increase the risk of cancer in the uterus (uterine cancer) and bowel cancer.

If your risk of developing ovarian cancer is high, RRSO is the only proven way to reduce that risk. It works very well – about 9 out of 10 people who have RRSO don't get ovarian cancer.

RRSO doesn't remove all cancer risk. This is because there's a small risk of other cancers developing in the abdominal lining (the area around your stomach). This lining cannot be removed.

We do not know whether RRSO reduces the risk of breast cancer. Surgery to remove both breasts (risk-reducing bilateral mastectomy) will reduce breast cancer risk. Regular breast screening can also help find breast cancer early.

Other procedures, like removing the fallopian tubes alone (without removing the ovaries), have not been shown to reduce ovarian cancer risk in people with a high inherited risk.

Unfortunately, there are no effective tests to find ovarian cancer at an early stage or before it spreads. Blood tests and scans (like pelvic ultrasound) can't find ovarian cancer early.

If you have Lynch syndrome, you have a higher risk of cancer in the lining of the uterus. This is called endometrial cancer. Because of this, surgery to remove your uterus (a hysterectomy) is usually recommended as well as RRSO. This surgery is usually recommended by age 50, but the timing depends on the gene mutation you have and your individual circumstances. Your doctor or family cancer clinic will guide you through your options.

People with the BRCA gene mutation who also have gynaecological problems such as fibroids or heavy menstrual bleeding, may also consider a hysterectomy at the same time as RRSO.

If your risk of developing ovarian cancer is high, risk-reducing salpingo-oophorectomy (RRSO) is the only proven way to lower that risk.

About the surgery

A gynaecological oncologist or gynaecologist who has experience in performing RRSO should perform the surgery.

You will have a general anaesthetic, so you will be asleep during the surgery. The surgery usually takes 1 to 3 hours.

Most people have keyhole surgery (laparoscopy). During this procedure, the surgeon makes 3 to 5 small cuts in your abdomen (stomach area).

You will usually be able to go home on the same day, but some people may need to stay in hospital overnight.

If you have had several previous operations or infections in your abdomen, your doctor may recommend a different surgery called a laparotomy. This involves a larger cut in the abdomen. Recovery after a laparotomy takes longer than from keyhole surgery and you may need more time in hospital and time off work.

You will need some time to recover before returning to work and your usual activities. After keyhole surgery, most people can return to work 1 to 2 weeks. If you have a laparotomy, you may need 4 to 6 weeks off work. Your surgeon will give you specific advice about recovering from surgery and when it is safe to return to your normal activities.

If you have a hysterectomy at the same time as your RRSO, the surgery will take longer, and recovery will take more time than with RRSO alone.

What are the effects of RRSO?

The effects of RRSO may depend on whether you have already gone through menopause.

If you have not yet experienced menopause, removing both ovaries will cause immediate menopause. This is called surgical menopause. RRSO also causes permanent infertility.

Natural menopause usually happens between the ages of 45 and 55. Because RRSO is advised between the ages of 35 and 45 years (depending on the gene mutation), it may lead to:

- premature menopause (before age 40), or
- early menopause (before age 45).

This resource explains some of the possible effects of surgical menopause. If you have questions, talk with your gynaecologist or GP. You can also ask for a referral to the Menopausal Symptom after Cancer (MSAC) clinic at the Women's.

Infertility

Removing both ovaries causes permanent infertility. This means you will not be able to become pregnant naturally after the surgery.

If you would like to have children in the future or wish to preserve the option of having children later in life, you may be able to collect and freeze eggs or embryos (fertilised eggs) before having RRSO. Fertility preservation may be available at no cost through the Victorian Public Fertility Care system for Victorian residents with a valid Medicare card. Private fertility preservation services are also available, but costs may apply.

Fertility preservation does not guarantee a successful pregnancy.

If you have a known BRCA1, BRCA2 or Lynch syndrome gene change it may be possible to test embryos for this. The availability and cost of this testing can vary, so it is important to discuss this with your fertility specialist or fertility service provider.

If you are considering fertility preservation, discuss your options with a fertility specialist before having RRSO.

Surgical menopause

Surgical menopause can cause symptoms such as:

- hot flushes
- night sweats
- vaginal dryness.

The effects of surgical menopause vary from person to person. Some people have mild symptoms or no symptoms at all. Others have symptoms that are more severe and last longer.

Unfortunately, there is no way to predict which symptoms you will experience after RRSO or how long they will last.

45 to 55 years

This is the age range most people experience natural menopause. If you have not yet gone through menopause, RRSO will cause immediate and permanent menopause.

Managing your menopause

Common symptoms of menopause include hot flushes, night sweats and vaginal dryness. Some people also notice changes in sleep and mood and changes in concentration and memory, sometimes called 'brain fog'.

Research has not shown that RRSO causes more severe symptoms than natural menopause, but everyone's experience is different.

Hot flushes and night sweats

Hot flushes are one of the most common and troublesome symptoms of menopause.

A hot flush often starts as a warm feeling in the chest or abdomen that moves up to the neck and head. It may also cause sweating.

About 4 in 5 people experience hot flushes after RRSO. Most describe their hot flushes and night sweats as mild. Menopausal hormone therapy (MHT) can help relieve these symptoms.

Research shows that hot flushes peak by 3 months after RRSO. Symptoms often continue but don't usually get worse during the following 2 years.

Vaginal dryness

Vaginal dryness affects around 3 in every 5 people after menopause. Symptoms can continue for many years and may include:

- pain and discomfort during sex
- discomfort or irritation of the vagina and vulva (the outer genital area).

Low-dose oestrogen vaginal tablets or creams can reduce vaginal dryness. You can use them alone or with menopausal hormone therapy (MHT). They are effective and usually safe to use after RRSO.

Your GP or menopause specialist can advise about treatments for vaginal dryness.

If you have had breast cancer, talk with your oncologist before using vaginal oestrogen.

Sexual function and wellbeing

Some people notice changes in their interest and experience of sex after menopause. Some experience a loss of interest, desire or enjoyment in sex. These changes can be upsetting and may affect intimate relationships.

Many factors can affect sexual wellbeing, including mood, self-image and relationships. Surgery to reduce the risk of breast cancer, or treatment for breast cancer can also affect body image and sexual wellbeing.

Research shows that RRSO can affect sexual function and may increase sexual distress and discomfort. Vaginal dryness can contribute to this.

Treatment options include:

- vaginal estrogen
- lubricants.

Testosterone can slightly improve sexual function for some people. However, its safety in BRCA1 and BRCA2 is unknown.

Testosterone is not recommended if you have had breast cancer.

Talk with your doctor about the treatment options that may be right for you.

Sleep disturbance

Disturbed sleep becomes more common with age. Some people notice changes in their sleep after RRSO.

Night sweats can interrupt sleep and make you feel tired during the day.

Treatment options include:

- managing hot flushes and night sweats
- cognitive behaviour therapy (CBT)
- hypnosis.

CBT helps people develop practical strategies to manage symptoms and improve sleep. A range of CBT resources are available online.

Poor sleep can affect your quality of life and your mood. It can also be a symptom of depression.

Talk with your doctor about ways to improve your sleep.

If you have cancer, the Peter MacCallum Cancer Centre provides support for sleep problems through its Can-Sleep program, which is part of the Psychosocial Oncology Program.

For more information visit the Peter Mac website - petermac.org/patients-and-carers/information-and-resources/can-sleep-improving-night-time-sleep-problems

Cognitive (brain) function

Research shows that RRSO has little effect on thinking, memory and concentration over the first 2 years after surgery.

People who use MHT have slightly better cognitive function than those who don't use MHT.

Anxiety and depression

Anxiety and depression are common and may become worse for a short time during menopause.

Research shows that symptoms of depression and anxiety increase in the first 3 to 6 months after RRSO. For most people, these symptoms improve within 12 to 24 months after surgery.

If you have had depression or anxiety in the past, you may be more likely to experience it again after RRSO. Talk with your doctor about how to monitor your mental health and what support is available if your symptoms change.

The following treatments may help:

- Some antidepressants can reduce hot flushes and help mood. Your doctor can prescribe these medicines.
- Cognitive behavioural therapy (CBT), delivered by a therapist, in a group or online can help reduce the distress of hot flushes and improve mood and sleep.
- Support groups can help you connect with people who have had similar experiences. Cancer Council Victoria and Inherited Cancers Australia can help you find a support group.

Long-term health after RRSO

Heart disease

Heart disease is a major cause of illness and death.

Premature or early menopause may increase the risk of heart disease. However, studies in people with BRCA1 or BRCA2 show that RRSO reduces the risk of death.

You can help reduce your risk of heart disease by:

- not smoking
- limiting alcohol or avoiding it completely
- maintaining healthy blood pressure, blood sugar and cholesterol levels
- exercising regularly
- maintaining a healthy weight
- eating a healthy diet
- managing health conditions such as high blood pressure, diabetes and high cholesterol.

Bone health

Premature or early menopause can increase the risk of thin bones (osteoporosis) and fractures.

A bone density scan can measure bone strength and help identify your risk of fracture.

If you experience premature or early menopause, you should have a bone density scan every 2 years until around age 50.

Taking MHT can help protect bone health and reduce the risk of fractures. If you can't take MHT, your doctor may recommend other medicines to prevent or treat osteoporosis.

You can also support your bone health by:

- doing weight-bearing exercises that help keep your bones strong
- getting enough calcium and vitamin D
- not smoking.

Talk with your doctor or other qualified health professionals for advice about bone health, nutrition and exercise that's right for you.

Body weight

Natural menopause can change the way fat and muscle are distributed in your body. It does not usually cause weight gain.

Research shows that RRSO does not affect body weight. However, some people may notice a slight increase in abdominal fat weight after surgery.

The best ways to maintain a healthy weight and muscle mass are regular exercise a healthy diet.

For most people, supplements have not been shown to improve health.

Healthy eating and regular exercise can also:

- improve bone health
- support mental health
- reduce the risk of diabetes, heart disease and other long-term conditions.

Urinary symptoms and bladder health

Urinary incontinence (leaking urine or 'wee') is common.

Factors that increase the risk of urinary incontinence include:

- pregnancy
- childbirth
- being overweight.

Vaginal estrogen can help relieve urinary symptoms such as urgency (the sudden, strong need to pass urine). It may also reduce recurring urinary tract infections.

However, menopausal hormone therapy (MHT) taken as tablets or patches can increase incontinence.

Talk to your doctor if urinary symptoms are affecting your quality of life. The Continence Foundation of Australia also provides information and support. Visit continence.org.au

Exercise

Regular exercise is one of the best ways to maintain a healthy weight and increase muscle mass. Combined with a healthy diet, it can improve your general health and may reduce the risk of common long-term conditions such as diabetes and heart disease.

Menopausal hormone therapy (MHT)

Menopausal hormone therapy, previously called hormone replacement therapy (HRT or HT), uses the hormone estrogen to manage menopausal symptoms such as hot flushes and night sweats. Those who have a uterus should also take a progestogen.

When menopause occurs prematurely (before age 40) or early (before age 45), your doctor may recommend MHT. MHT can help manage symptoms and reduce the risk of bone loss and fractures.

For people with BRCA1 or BRCA2 who have not had breast cancer, MHT is generally considered safe in the short term. It is the most effective treatment for hot flushes and night sweats.

Non-hormonal treatments are also available for hot flushes and night sweats. However, these treatments do not protect against osteoporosis or fractures.

Drug-free treatments include:

- cognitive behaviour therapy (CBT)
- hypnosis.

Your GP, gynaecologist or menopause specialist can discuss the benefits and risks of these options with you.

The decision to use MHT depends on your:

- personal preferences
- symptoms
- age
- medical history.

MHT may not be suitable if you have:

- had breast cancer
- had blood clots in your legs or lungs
- heart disease
- untreated high blood pressure
- some types of liver disease.

Types of MHT

Different types of MHT are available. They include:

- oestrogen alone
- oestrogen and progestogen together - called combined MHT.

If you still have your uterus (womb), you will need to take combined MHT.

The progestogen can be given as:

- a tablet
- a patch
- an intra-uterine device (IUD), called Mirena.

A Mirena can be inserted during your RRSO surgery. If you are considering this option, discuss it with your surgeon before surgery.

If you have had a hysterectomy, or if you have a Mirena, you only need to use oestrogen for MHT.

Oestrogen is available as a:

- patch
- gel
- tablet.

Your GP, gynaecologist or a menopause specialist can help you decide which option is right for you.

MHT is generally safe for people at high-risk of ovarian cancer who have not had breast cancer.

Breast screening for people at high-risk of breast cancer

Gene mutations such as BRCA1, BRCA2, PALB2 and BRIP1Ag increase the risk of breast cancer and some other cancers.

Some people choose to take medicines such as tamoxifen to reduce their risk of breast cancer. Others decide to have breast surgery, such as a double mastectomy (removal of both breasts) to reduce their risk.

Unlike ovarian cancer, screening for breast cancer can detect the disease earlier, which leads to better cancer outcomes.

The screening tests recommended for you will depend on your age and whether you have reached menopause. Screening may include:

- magnetic resonance imaging (MRI)
- ultrasound
- mammograms.

Your family cancer clinic, breast surgeon and GP can advise on the best screening program for you.

Ongoing care after RRSO

After your surgery and follow-up appointment, your surgeon will refer you back to your GP.

Your GP will:

- monitor your general health and bone health
- assess and manage the effects of your surgery and any ongoing issues
- provide information about possible cancer symptoms to watch for
- arrange any recommended screenings and specialist care if you are at high risk of other cancers.

If menopausal symptoms continue to affect your quality of life after surgery, the Menopause Symptoms after Cancer (MSAC) clinic can provide support to help you manage them. Find out more at - thewomens.org.au/patients-visitors/clinics-and-services/menopause/menopause-symptoms-after-cancer

For more information

Royal Women's Hospital

thewomens.org.au

The Royal Women's Hospital provides information about a range of health issues including menopause, breast health and gynaecological cancers.

Fact sheets

- **Endometrial cancer**
  thewomens.org.au/health-information/fact-sheets#endometrial-cancer
- **Menopause**
  thewomens.org.au/health-information/fact-sheets#menopause
- **Menopausal hormone therapy**
  thewomens.org.au/health-information/fact-sheets#menopausal-hormone-therapy
- **Ovarian cancer**
  hewomens.org.au/health-information/fact-sheets#ovarian-cancer
- **Treating hot flushes with non-hormonal medicines - alternatives to menopausal hormone therapy**
  thewomens.org.au/health-information/fact-sheets#treating-hot-flushes-an-alternative-to-hormonal-replacement-therapy

Other support organisations

- **Inherited Cancers Australia**
  inheritedcancers.org.au
  Helps people assess their cancer risk, access reliable information and make informed health decisions.
- **Australasian Menopause Society**
  menopause.org.au
  Provides information about menopause, menopausal hormone therapy and non-hormonal treatment options.

- **Better Health Channel**
  betterhealth.vic.gov.au
  Provides easy to understand, reliable information on a wide range of health issues.
- **Breastscreen Victoria**
  breastscreen.org.au
  Provides breast cancer screening and information about breast cancer, including signs, symptoms and screening.
- **Cancer Council Victoria**
  cancervic.org.au
  Provides information about cancer, treatment options and support services.
- **Continence Foundation of Australia**
  continence.org.au
  Provides information about bladder and bowel health.
- **Counterpart**
  counterpart.org.au
  Offers peer support from people with lived experience of breast or gynaecological cancer.
- **Jean Hailes**
  jeanhailes.org.au
  Provides information about a range of health topics, including menopause.
- **Healthy Bones Australia**
  healthybonesaustralia.org.au
  Provides information about bone health, osteoporosis prevention and living well with osteoporosis.
- **Peter MacCallum Cancer Centre**
  petermac.org
  Provides information and support about the physical, emotional and social impacts of cancer for patients, families and carers.

Do you need an interpreter?

You can ask for an interpreter if you need one.

Family Violence Support

1800 Respect National Helpline

You can get help if you have experienced sexual assault, domestic or family violence and abuse.
You can call any time of day or night.
1800 737 732
1800respect.org.au

Thank you

We wish to thank those who generously contributed to the development of this resource, particularly those who participated in our survey and provided feedback.

We would also like to thank the Western & Central Melbourne Integrated Cancer Service, who provided funding assistance for this project.

Feedback

The Royal Women's Hospital aims to provide health information that is useful and easy to understand. We welcome your feedback. If you have any comments about this resource, please contact the Women's at CHITeam@thewomens.org.au.

Disclaimer

This resource provides general information only. For specific advice about your healthcare needs, you should seek advice from your health professional. The Royal Women's Hospital does not accept any responsibility for loss or damage arising from your reliance on this resource instead of seeing a health professional. If you require urgent medical attention, please contact your nearest emergency department.

© The Royal Women's Hospital

First published 2019
Revised 2026