MANAGING WOMEN AT HIGH INHERITED RISK OF OVARIAN CANCER

INFORMATION RESOURCE FOR HEALTHCARE PROFESSIONALS

the women's
the royal women's hospital
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CONTENTS

KEY POINTS

THE ONLY INTERVENTION
proven to significantly reduce mortality in women at high inherited risk of ovarian cancer is risk-reducing bilateral salpingo-oophorectomy (RRBSO).

BARRIERS TO UPTAKE
of RRBSO include loss of fertility and concerns about the short and long-term of surgical menopause.

RECOMMENDED AGE FOR RRBSO
depends on personal and family cancer history and the gene mutation. General recommendations are:

BRCA1 MUTATION CARRIERS
RRBSO by 40 years of age

BRCA2 MUTATION CARRIERS
RRBSO by 45 years of age

LYNCH SYNDROME GENE MUTATION CARRIERS
RRBSO and hysterectomy by age 40–50 years. Hysterectomy is recommended for women with Lynch syndrome because of the increased risk of endometrial cancer.

CURRENT EVIDENCE SUGGESTS
that RRBSO does not increase the risk of anxiety or depression and cancer-related anxiety may be reduced.

WOMEN SHOULD BE ADVISED
about a decline of fecundity with age and advised to complete their families before their recommended age of RRBSO.

BEFORE RRBSO
premenopausal women should have the opportunity to discuss interventions to manage menopausal symptoms following RRBSO, including Menopausal Hormone Therapy (MHT), also referred to as Hormone Replacement Therapy (HRT) and Hormone Therapy (HT).

THE POTENTIAL ADVERSE IMPACT
of surgical menopause on bone health and the role of MHT in preventing bone loss and fracture should be explained to premenopausal women undergoing RRBSO.

MHT SHOULD BE OFFERED
to all premenopausal women under 45 years after RRBSO who do not have contraindications to prevent bone loss. MHT can be started immediately following RRBSO and is generally advised until the average age of menopause (approximately age 50 years).

CURRENT EVIDENCE FROM HIGH-RISK

women suggests that vasomotor symptoms are common following RRBSO and are reduced but not ameliorated by MHT.

NON-HORMONAL TREATMENTS

are not as effective for vasomotor symptoms of menopause as MHT and do not treat vaginal dryness or prevent osteoporosis and fracture.

VAGINAL OESTROGENS

are effective treatments for vaginal dryness and have minimal systemic absorption. Vaginal oestrogen should be offered to women with vaginal dryness after RRBSO, including women taking systemic MHT.

BONE DENSITY

is generally measured within 3 months after surgery, and then every 2 years depending on results. Women with osteoporosis should be managed according to evidence-based guidelines.

IT IS NOT KNOWN WHETHER RRBSO

increases the risk of cardiovascular and metabolic disease in high-risk women. Risk factors such as smoking, hypertension, hyperlipidaemia and diabetes should be managed according to current national guidelines.

INTRODUCTION

Ovarian cancer is the sixth most common cause of cancer-related death in Australian women. It carries a poor prognosis with survival rates at about 44% at 5 years after diagnosis [1, 2].

There is currently no effective screening strategy for ovarian cancer. The only intervention proven to significantly reduce mortality due to ovarian cancer in women at high inherited risk of ovarian cancer (high-risk women) is risk-reducing bilateral salpingo-oophorectomy (RRBSO) [3].

44%

SURVIVAL RATE AT 5 YEARS AFTER DIAGNOSIS

AIM OF THIS RESOURCE

This resource provides information about RRBSO for high-risk women. It informs health professionals about the indications for RRBSO and the impact of RRBSO on non-cancer outcomes in premenopausal women.

The content of this resource has been informed by surveying high-risk women and their treating healthcare professionals about information needs around RRBSO.

We have identified the following areas where more information was needed:

- timing of RRBSO
- the effects of RRBSO on fertility
- managing menopause, including information on menopausal hormone therapy (MHT)
- post-surgery body changes.

WOMEN OFTEN WANT MORE INFORMATION

...EFFECTS OF RRBSO IN PREMENOPAUSAL WOMEN ON LONG-TERM HEALTH OUTCOMES

BRCA GENE MUTATION CARRIERS AND LYNCH SYNDROME

The overall lifetime risk of developing ovarian cancer in Australian women is about 1.5%. Most women are diagnosed after natural menopause.

Up to 15% of all ovarian cancer cases can be attributed to a germline mutation in a known ovarian cancer predisposing gene [4]. The most common mutations known to increase ovarian cancer risk are in BRCA1 and BRCA2 genes and the Lynch syndrome genes (MSH2, MLH1, PMS2, and MSH6).

Most (65–85%) ovarian cancers associated with germline gene mutations occur in women with BRCA1 or BRCA2 gene mutations. Other genes associated with hereditary ovarian cancers include TP53, RAD51C, RAD51D and BRIP1.

65–85%

...OVARIAN CANCERS ASSOCIATED WITH GERMLINE GENE MUTATIONS OCCUR IN WOMEN WITH BRCA1 OR BRCA2 GENE MUTATIONS. OTHER GENES ASSOCIATED WITH HEREDITARY OVARIAN CANCERS INCLUDE TP53, RAD51C, RAD51D AND BRIP1

This resource focuses on women with ovarian cancer associated with germline BRCA gene mutations and Lynch syndrome mutations.

Women who have inherited mutations in the BRCA1 or BRCA2 genes have a substantially higher risk of ovarian and breast cancer than the general population [4]. BRCA2 gene mutations may also increase the risk of pancreatic cancer in men and women [5], and prostate cancer in men [6].

Lynch syndrome is a familial cancer caused by a mutation in one of four genes: MSH2, MLH1, MSH6 and PMS2. Women with Lynch syndrome have an elevated lifetime risk of colorectal and endometrial cancers, and ovarian, upper gastrointestinal, pancreatic [7] and urinary tract cancers [8].

Table 1 shows the risk of developing different cancers in women with mutations in BRCA or Lynch syndrome genes.

Table 1: Lifetime risk cancer in women with BRCA or Lynch syndrome gene mutations

Type of cancer	BRCA1 [a]	BRCA2 [a]	MLH1 [b]	MSH2 [b]	MSH6 [b]	General population [a]
Breast [4]	72	69	–	–	–	11.7 [9]
Ovarian [4, 10]	44	17	20	24	1	1.1 [11]
Colorectal [10]	–	–	41	48	12	6.3 [12]
Endometrial [10]	–	–	18	30	26	2.3 [12]
Prostate [13, 14]	8.6 [b]	15 [b]	4.4	3.9	2.5	5.3 [15]
Pancreatic [7, 14]	Increased incidence	Increased incidence	7.5	10.9	Insufficient data	1.1 [12]

– = no data available

[a] % cumulative risk to age 80 years

[b] % cumulative risk to age 70 years

RISK-REDUCING BILATERAL SALPINGO-OOPHORECTOMY (RRBSO)

RRBSO includes removal of both ovaries and fallopian tubes in high-risk women. The recommendation to undergo RRBSO is usually made by a clinical geneticist, gynaecological oncologist or gynaecologist. Recommendations should consider the timing of RRBSO, and the advantages and disadvantages of a hysterectomy at the time of RRBSO.

RRBSO can be performed in a public or private hospital; usually laparoscopically under general anaesthesia as a day case. After RRBSO, women generally only require simple analgesia for a few days and can return to most normal activities after 1 to 2 weeks. If a hysterectomy at the time of RRBSO is performed, the recovery time will be longer.

THE ONLY INTERVENTION SHOWN TO REDUCE RISK OF DEVELOPING OVARIAN CANCER IN HIGH-RISK WOMEN IS RISK-REDUCING BILATERAL SALPINGO-OOPHORECTOMY (RRBSO)

RRBSO should be performed by a gynaecological oncologist or gynaecologist with expertise in this area, since optimal risk reduction requires removal of all fallopian and ovarian tissue [16]. Similarly, to exclude current premalignant or malignant disease, an experienced pathologist should examine the removed tissues using the SEE-FIM protocol (a quality standard pertaining to the preparation and histological examination of specimens) [17].

Indications for RRBSO

RRBSO reduces the risk of ovarian cancer by up to 95% in high-risk women and leads to an overall survival benefit [18]. Occult ovarian cancer is detected in up to 5% of women at the time of RRBSO [19]. Bilateral salpingectomy alone is sometimes offered to high-risk women who are not yet prepared for bilateral oophorectomy. Although it is possible that removing the fallopian tubes reduces the risk of ovarian cancer in high-risk women, there is currently insufficient evidence to support salpingectomy alone as a risk-reducing intervention. Consequently, salpingectomy alone is not recommended to high-risk women to reduce their risk of ovarian cancer [20].

Barriers to RRBSO uptake

Despite the efficacy of RRBSO in reducing ovarian cancer risk, not all high-risk women elect to have RRBSO at the recommended time. Barriers to uptake of RRBSO include loss of fertility and concerns about the short and long-term consequences of surgical menopause.

BARRIERS TO RRBSO UPTAKE...

- LOSS OF FERTILITY
- CONCERNS ABOUT THE CONSEQUENCES OF SURGICAL MENOPAUSE

Timing of RRBSO

The timing of recommended RRBSO will depend on the gene mutation, and personal and family cancer history. Current Australian recommendations are:

- BRCA1 gene mutation carriers undergo RRBSO by age 40
- BRCA2 gene mutation carriers undergo RRBSO by age 45
- MSH2, MLH1 and MSH6 gene mutation carriers undergo RRBSO and hysterectomy at age 40–50.

The recommended timing of RRBSO is based on the risk of ovarian cancer and the potential short and long-term risks associated with surgical menopause, which may be greater for younger premenopausal women [21]. Women are generally advised to wait until the recommended age before undergoing RRBSO.

GENERAL RECOMMENDED AGES FOR RRBSO...

BRCA1
BY 40 YEARS OF AGE

BRCA2
BY 45 YEARS OF AGE

LYNCH SYNDROME
40–50 YEARS OF AGE
(PLUS HYSTERECTOMY)

Hysterectomy

Hysterectomy is not routinely recommended at the time of RRBSO for BRCA mutation carriers since it adds to the complexity and complications of surgery and has not been shown to confer any benefit for cancer risk reduction. However, BRCA mutation carriers with independent indications for hysterectomy or those who are planning to take tamoxifen after RRBSO may consider hysterectomy to remove the small risk of endometrial pathology associated with tamoxifen use [22]. In women with Lynch syndrome, hysterectomy is routinely recommended at the time of RRBSO because of the associated increased risk of endometrial cancer.

HYSTERECTOMY IS ROUTINELY RECOMMENDED AT THE TIME OF RRBSO IN WOMEN WITH LYNCH SYNDROME BECAUSE OF THE INCREASED RISK OF ENDOMETRIAL CANCER

Risks associated with RRBSO

In the general population, bilateral oophorectomy at the time of hysterectomy in women under age 40 carries an increased risk of cardiovascular disease and an increase in multimorbidity and all-cause mortality, particularly for those who do not take MHT [23]. However, these findings may not be generalisable to high-risk women undergoing RRBSO. Women in the general population who undergo bilateral oophorectomy at the time of hysterectomy have higher baseline risks for cardiovascular and metabolic disease which may explain these findings.

There is a small residual risk (1–2%) of primary peritoneal cancer after RRBSO [24]. Currently, there is no effective screening or surveillance for primary peritoneal cancer. High-risk women should be advised of the symptoms of primary peritoneal cancer after RRBSO such as prolonged pain, bloating, early satiety, or nausea and vomiting [25].

To reduce the potential risks of premenopausal oophorectomy on long-term health, clinicians should actively promote the preventive health interventions shown to decrease overall cancer risk (as well as the risk of cardiovascular disease), including [26]:

- maintaining a healthy body mass index
- participating in regular physical activity
- optimising hypertension, hyperlipidaemia and diabetes clinical management
- minimising alcohol intake
- minimising fat intake
- avoiding tobacco.

SYMPTOMS AFTER RRBSO AND THEIR MANAGEMENT

The following symptoms should be discussed with high-risk women before undergoing RRBSO.

Infertility

As bilateral oophorectomy will cause permanent infertility, high-risk women are advised to complete their families before their recommended age of RRBSO. Women should also be advised that women's fecundity decreases gradually but significantly beginning at approximately 32 years, with a more rapid decrease after age 37 years [27].

High-risk women who are still fertile but have not completed their families before their recommended age for RRBSO can consider egg or embryo freezing. However, these procedures do not guarantee a later pregnancy and are costly. Embryos produced from assisted reproduction can be screened for gene mutations, but this will incur additional costs. Because eggs are single cells, they cannot currently be tested for gene mutations.

AS BILATERAL OOPHORECTOMY WILL CAUSE PERMANENT INFERTILITY, WOMEN ARE ADVISED TO COMPLETE THEIR FAMILIES BEFORE THEIR RECOMMENDED AGE OF RRBSO

Surgical menopause

Bilateral oophorectomy will induce permanent menopause. The removal of both ovaries before natural menopause is termed 'surgical menopause'. Because RRBSO is generally undertaken for high-risk women below the average age of natural menopause of 50 years, it usually leads to surgical menopause.

BEFORE 40

- BECAUSE RRBSO IS USUALLY UNDERTAKEN BEFORE 50 YEARS, IT USUALLY LEADS TO SURGICAL MENOPAUSE
- SURGICAL MENOPAUSE IN THE GENERAL POPULATION HAS BEEN ASSOCIATED WITH INCREASED LONG-TERM RISKS OF NON-COMMUNICABLE DISEASE INCLUDING CARDIOVASCULAR AND COGNITIVE DISEASES

Vasomotor symptoms

Vasomotor symptoms (VMS) such as hot flushes and night sweats affect more than 80% of women at natural menopause. The severity and duration vary, but with an average duration of around 4 years and a tendency for greater severity in the year around the final menstrual period [28]. Women who undergo RRBSO usually experience VMS, which generally becomes apparent within 6 weeks after the surgery. It is not known if the severity or duration of VMS symptoms following surgical menopause differ from those of natural menopause.

Oestrogen-containing MHT is currently the most effective treatment for VMS [29].

VMS

WOMEN WHO UNDERGO RRBSO USUALLY EXPERIENCE VMS, WHICH GENERALLY BECOMES APPARENT WITHIN 6 WEEKS AFTER THE SURGERY

Vaginal dryness

Vaginal dryness affects around 60% of postmenopausal women and tends to persist. Vaginal dryness may cause pain during sexual activity, and can be accompanied by symptoms such as itching and irritation [30].

Vaginal oestrogens are effective treatments for vaginal dryness, and have minimal systemic absorption [30]. Vaginal estrogen therapy also improves menopause-related quality of life and sexual function in symptomatic postmenopausal women [30]. In women with a personal history of breast cancer, use of vaginal oestrogen should first be discussed with the treating oncologist.

In high-risk women problematic vaginal dryness after RRBSO can persist despite the use of systemic MHT [31]. Clinicians should consider offering vaginal estrogens or vaginal lubricants in addition to systemic MHT to reduce vaginal discomfort, particularly during sexual activity [32].

VAGINAL OESTROGENS ARE EFFECTIVE FOR VAGINAL DRYNESS, AND HAVE MINIMAL SYSTEMIC ABSORPTION

Sexual function, mental health and body image

Receiving a diagnosis of a gene mutation and undergoing risk-reducing surgery including bilateral mastectomy may raise concerns about body image, sense of self, gender identity, sexuality, and psychosocial and mental wellbeing [33]. Health professionals should manage women's concerns and issues on an individual basis. Consider referring women to a psychologist or sexual health counsellor if requested or needed.

CONCERNS

RECEIVING A DIAGNOSIS OF A GENE MUTATION AND UNDERGOING SUBSEQUENT RISK-REDUCING SURGERY MAY RAISE CONCERNS ABOUT BODY IMAGE, SENSE OF SELF, GENDER IDENTITY, SEXUALITY, AND PSYCHOSOCIAL AND MENTAL WELLBEING

Women should be advised that surgery may have an adverse effect on their sexual function which might be persistent. Sexual dysfunction is common after RRBSO [31]. However, it is unclear how much this results from persistent discomfort during sexual activity due to vaginal dryness, and how much is due to loss of desire, interest and pleasure.

In women who are premenopausal before undergoing RRBSO, a combination of systemic MHT and vaginal oestrogen improve sexual function but may not improve desire and pleasure with sex. Pharmacological treatments, including testosterone patches and flibanserin, are available, but their safety and efficacy are not established in high-risk women [34].

RRBSO

- MAY HAVE A PERSISTENT NEGATIVE EFFECT ON SEXUAL FUNCTION
- DOES NOT INCREASE THE RISK OF ANXIETY OR DEPRESSION AND CANCER-RELATED ANXIETY MAY BE REDUCED

Current evidence suggests that RRBSO does not increase the risk of anxiety or depression [35] and cancer-related anxiety may be reduced [36, 37]. Diagnosing mood disturbance may be difficult in women with menopausal symptoms, as these may overlap with symptoms of depression and anxiety [38].

Bone health

Premenopausal oophorectomy is associated with an increased risk of osteoporosis and bone fracture [39]. Bone density should be measured using bone densitometry (DXA) within 3 months of RRBSO in premenopausal women and again every 2 years depending on results. Medicare rebates for a DXA apply for women with early menopause due to RRBSO.

Women with osteoporosis should be managed according to evidence-based guidelines or referred to an endocrinologist [39]. Current evidence suggests that MHT reduces bone density loss and prevents fracture [40].

Lifestyle interventions to maintain bone health include participating in weight-bearing exercise, taking adequate calcium and vitamin D, and avoiding bone toxins such as tobacco.

Cardiovascular health

Cardiovascular disease (CVD) is the leading cause of death in women. There are no prospective studies of CVD risk following premenopausal oophorectomy, but cohort studies in the general population suggest that surgical menopause may increase the risk of heart disease and stroke [21].

Limited evidence suggests that MHT may reduce the risk of CVD following surgical menopause. Clinicians should provide lifestyle and behavioural advice on the prevention of CVD [41], and assess women's risk for CVD. Risk factors such as smoking, hypertension, hyperlipidaemia and diabetes should be managed according to evidence-based guidelines [41].

INCREASED RISK

- PREMENOPAUSAL OOPHORECTOMY IS ASSOCIATED WITH AN INCREASED RISK OF OSTEOPOROSIS AND BONE FRACTURE
- SURGICAL MENOPAUSE MAY INCREASE THE LONG-TERM RISK OF HEART DISEASE AND STROKE

MENOPAUSAL HORMONE THERAPY (MHT)

Oestrogen-containing MHT (also called hormone replacement therapy [HRT] or hormone therapy [HT]) is currently the most effective treatment for VMS and can also improve vaginal dryness and reduce the risk of osteoporosis and fracture [42].

Who, timing and duration

MHT should be offered to all premenopausal women under 45 years following RRBSO who do not have contraindications in order to manage menopausal symptoms and prevent osteopororis and fracture. [43]. MHT can be started immediately after RRBSO. MHT is generally continued until around age 50 years (the average age of natural menopause).

Women over 45 years old who do not have troublesome symptoms of menopause after RRBSO are generally not recommended to take MHT unless they have risk factors for osteoporosis. High-risk women who do not take MHT after premenopausal RRBSO should have DXA measures every 2 years.

On cessation of MHT around 50% of women experience a resurgence of VMS and there is currently no evidence-based strategy to avoid this [44].

Contraindications

Contraindications to MHT include [43]:

- a personal history of breast cancer
- a personal history or high inherited risk of thromboembolism
- undiagnosed abnormal uterine bleeding
- uncontrolled hypertension
- existing CVD.

OESTROGEN-CONTAINING MHT

IS CURRENTLY THE MOST EFFECTIVE TREATMENT FOR VMS AND CAN ALSO IMPROVE VAGINAL DRYNESS AND REDUCE FRACTURE RISK

UNDER 45 YRS

ALL WOMEN UNDER 45 WHO DO NOT HAVE CONTRAINDICATIONS AT THE TIME OF RRBSO SHOULD BE OFFERED MHT UNTIL AROUND AGE 50 YEARS

IF THERE ARE NO CONTRAINDICATIONS, MHT CAN BE STARTED IMMEDIATELY AFTER RRBSO

Types

Systemic oestrogen can be given as an oral or transdermal preparation. Transdermal oestrogen is preferable in women who are at increased risk of venous thromboembolic disease [45].

For women who retain their uterus, MHT must contain a progestogen. Progestogens can be administered orally or through transdermal or intrauterine devices.

The content of compounded or 'bioidentical' MHT products is not regulated, with the safety or efficacy of these products unknown. These products should not be recommended or prescribed. Implants containing oestrogen or testosterone are also not recommended, because they may lead to very elevated hormone levels and tolerance (tachyphylaxis). Also these implants cannot be removed.

Tibolone is a synthetic product which binds to the oestrogen, progesterone and androgen receptors. It can be used as an alternative to combined MHT and may be more effective for libido than MHT [46].

SAFETY... EFFICACY

THE CONTENTS OF COMPOUNDED OR 'BIOIDENTICAL' TREATMENTS FOR MENOPAUSAL SYMPTOMS IS NOT REGULATED. THE SAFETY AND EFFICACY OF THESE PRODUCTS IS NOT KNOWN AND THEY SHOULD NOT BE RECOMMENDED OR PRESCRIBED

Dose

Women in the general population are usually offered the lowest dose of MHT to manage their symptoms. Average doses of MHT contain around 50mcg of oestrogen per day (equivalent to 1mg oral oestrogen). It is not known whether higher doses of estrogen are required to manage symptoms or prevent bone loss after surgical menopause.

Although MHT reduces VMS by about 85% [47] in women who have undergone natural menopausal, studies in high-risk women have demonstrated that VMS may persist after RRBSO despite the use of MHT [48]. High-risk women should therefore be advised that they may experience persistent VMS after RRBSO.

Safety

In the general population of postmenopausal women, prolonged (>5 years) use of combined MHT (oestrogen and progestogen) confers a small increase in the risk of breast cancer, but oestrogen-only MHT may not increase breast cancer risk [49, 50]. However, a personal history of breast cancer is generally a contraindication to MHT, even for oestrogen receptor negative breast cancers.

In older postmenopausal women from the general population, more than 5 years use of combined MHT increases the risk of a breast cancer but not death from breast cancer [51]. In younger menopausal women there is insufficient evidence to determine whether MHT impacts on breast cancer risk. Current international consensus suggests that for BRCA mutation carriers without a personal history of breast cancer the benefits of MHT outweigh the potential risks [52] and data are generally reassuring that MHT does not increase breast cancer risk in high-risk women [53]. However, following concerns that combined MHT may be associated with greater risk of breast cancer in BRCA1 mutation carriers [53], it is reasonable to minimise exposure to exogenous progestins. This might be achieved by the use of intrauterine progestins (such as Mirena) with low systemic absorption or through combined estrogen and selective estrogen receptor modulator preparations (such as Duavive), which do not contain progestin.

NON-HORMONAL TREATMENTS FOR MENOPAUSE SYMPTOMS

VMS are common in women with breast cancer, and may be more severe and persistent than in the general population [54]. However, women with breast cancer should avoid systemic MHT, and may require non-hormonal treatments. Also, most women experience a resurgence of VMS when MHT is discontinued [55], which may require non-hormonal treatment.

When MHT is contraindicated, or for those who wish to avoid MHT, there are several non-hormonal and non-pharmacological alternatives [43]. However, current alternatives for VMS are not as effective as MHT and will not confer the additional benefits of improving vaginal dryness or maintaining bone health [43, 56].

Effective non-pharmacological treatments for vasomotor symptoms include cognitive behaviour therapy (CBT) and hypnosis. CBT has been shown to reduce the problem rating and interference due to vasomotor symptoms.

Alternative pharmacological treatments include:

- selected serotonin-reuptake inhibitors (SSRI)
- selected noradrenaline reuptake inhibitors (SNRI)
- gabapentin
- clonidine.

NON-HORMONAL TREATMENTS

FOR MENOPAUSE ARE NOT AS EFFECTIVE AS MHT AND WILL NOT REDUCE VAGINAL DRYNESS OR PREVENT OSTEOPOROSIS AND FRACTURE.

CARE AND MANAGEMENT OF HIGH-RISK WOMEN: ROLES AND RESPONSIBILITIES OF HEALTHCARE PROFESSIONALS

A Medicare rebate is available if genetic testing is requested by an eligible specialist for biological relatives of a patient who has had a pathogenic mutation identified in one or more of the genes. Most high-risk women will have genetic testing arranged through a familial cancer centre (FCC) or eligible specialist.

The following sections outline the usual care responsibilities for different health professionals, and a flow chart outlining the usual care plan for high-risk women. The health professionals involved will depend on local resources and a woman's preferences. However, the woman and all her treating health professionals should have a shared understanding of their roles and responsibilities and consider women's psychosocial needs. Good communication between general practitioners and other specialists, including those at FCCs, is important to ensure well-coordinated care is available to all high-risk women.

General practitioners

General practitioners (GPs) play a central role in ensuring women have access to and receive the best clinical care.

GPs should provide the following:

Identification and initial referral

- identify high-risk women by risk assessment, based on their family, personal and genetic history
- refer high-risk women to an eligible specialist or FCC for genetic testing, assessment and advice
- provide information about what to expect from being referred.

Information, prevention and recall

- educate women about cancer risk
- advise women regarding informing relatives who may also have inherited a mutation
- provide information and support women regarding lifestyle and behavioural strategies to reduce cancer risk
- support women in decisions about RRBSO and other risk mitigation strategies, such as for breast or bowel cancer
- develop a care plan as required (if not undertaken by Family Cancer Centre)
- make appropriate referrals as required (e.g. refer to specialist care for other cancer risks such as breast, bowel and uterine cancer if not undertaken by Family Cancer Centre)
- set-up recall systems for women one year before the recommended age for RRBSO
- refer women to a gynaecologist for RRBSO at the recommended age.

Follow-up, surveillance and long-term health

- monitor bone health, including:
  - for patient <45 years, recommend MHT (if not contraindicated) and arrange a DXA within 3 months of RRBSO, followed by a DXA every 2 years until 45 years of age and then as required
  - provide advice about lifestyle interventions to maintain bone health; including weight-bearing exercise, taking adequate calcium and vitamin D and avoiding bone toxins such as tobacco
- assess and manage psychosocial support and the effects of being high risk and treatments; including effects on mental health, sexuality, fertility and relationships
- provide ongoing holistic health care including for cardiovascular risks
- provide information about cancer symptoms
- manage symptoms of menopause in conjunction with menopause specialists if needed (see page 21).

SHARED UNDERSTANDING

THE WOMAN AND HER TREATING HEALTHCARE PROFESSIONALS SHOULD HAVE A SHARED UNDERSTANDING OF THEIR ROLES AND RESPONSIBILITIES AND CONSIDER THE WOMAN'S PSYCHOSOCIAL NEEDS

GOOD COMMUNICATION

BETWEEN GPS AND OTHER SPECIALISTS, INCLUDING THOSE AT FCCS, IS IMPORTANT TO ENSURE WELL-COORDINATED CARE IS AVAILABLE TO HIGH-RISK WOMEN

Familial cancer centres (clinical geneticist and team)

These centres provide genetic counselling and testing and often co-ordinate a woman's cancer care over a lifetime. They develop care plans, make referrals to specialists and communicate with a woman's GP.

Familial cancer centres should provide the following:

Information, counselling and testing

- counsel and provide information about cancer risk and the extent of these risks
- offer genetic testing as appropriate
- discuss the recommended timing for undergoing RRBSO and other cancer risk mitigation strategies
- provide information to other family members about Familial Cancer Centres and how they can access testing.

Develop a care plan

- develop a care plan that includes information about evidence-based interventions to reduce cancer risk, such as RRBSO for ovarian cancer. The care plan should also include information about ineffective interventions, such as ovarian cancer screening.

Referral and communication

- refer high-risk women as appropriate to
  - gynaecological oncologist or gynaecologist with expertise in RRBSO
  - breast surgeon to discuss mitigation strategies for their breast cancer risk, such as screening, mastectomy and pharmacological therapies where appropriate
  - gastroenterologist to discuss mitigation strategies for their bowel cancer risk where appropriate
  - refer to a fertility specialist if required
- communicate and coordinate with a woman's GP.

Gynaecologists

Gynaecologists should provide the following:

Information and counselling

- counsel women at high inherited risk of cancer and provide information about:
  - risk of developing ovarian and uterine cancer
  - evidence-based interventions to reduce cancer risk
  - timing of RRBSO
  - advise women about fecundity and age and to complete their families before recommended age of RRBSO
- advise women who decline RRBSO that there are no other evidence-based interventions to reduce ovarian cancer risk
- symptoms of cancer
- lifestyle and behavioural strategies to reduce cancer risk
- continuing cervical cancer screening if the uterus is retained.

Surgery and surgical menopause

- discuss surgery, including:
  - benefits, risks and potential complications, based on the woman's age, comorbidities and surgical history
  - surgical menopause and its likely effects
  - starting and stopping MHT
  - possible effects of procedures on body image, sexual intercourse and libido
- perform RRBSO with or without hysterectomy, send a pathology sample for examination and ensure that pathology specimens are reviewed by an experienced pathologist using the SEE-FIM technique [17].

Referral and communication

- refer all pre and perimenopausal women to a menopause specialist
- refer to a fertility specialist if required
- assess women's needs for psychosocial support and refer accordingly
- communicate with a woman's GP about management and referrals.

MENOPAUSE SPECIALIST

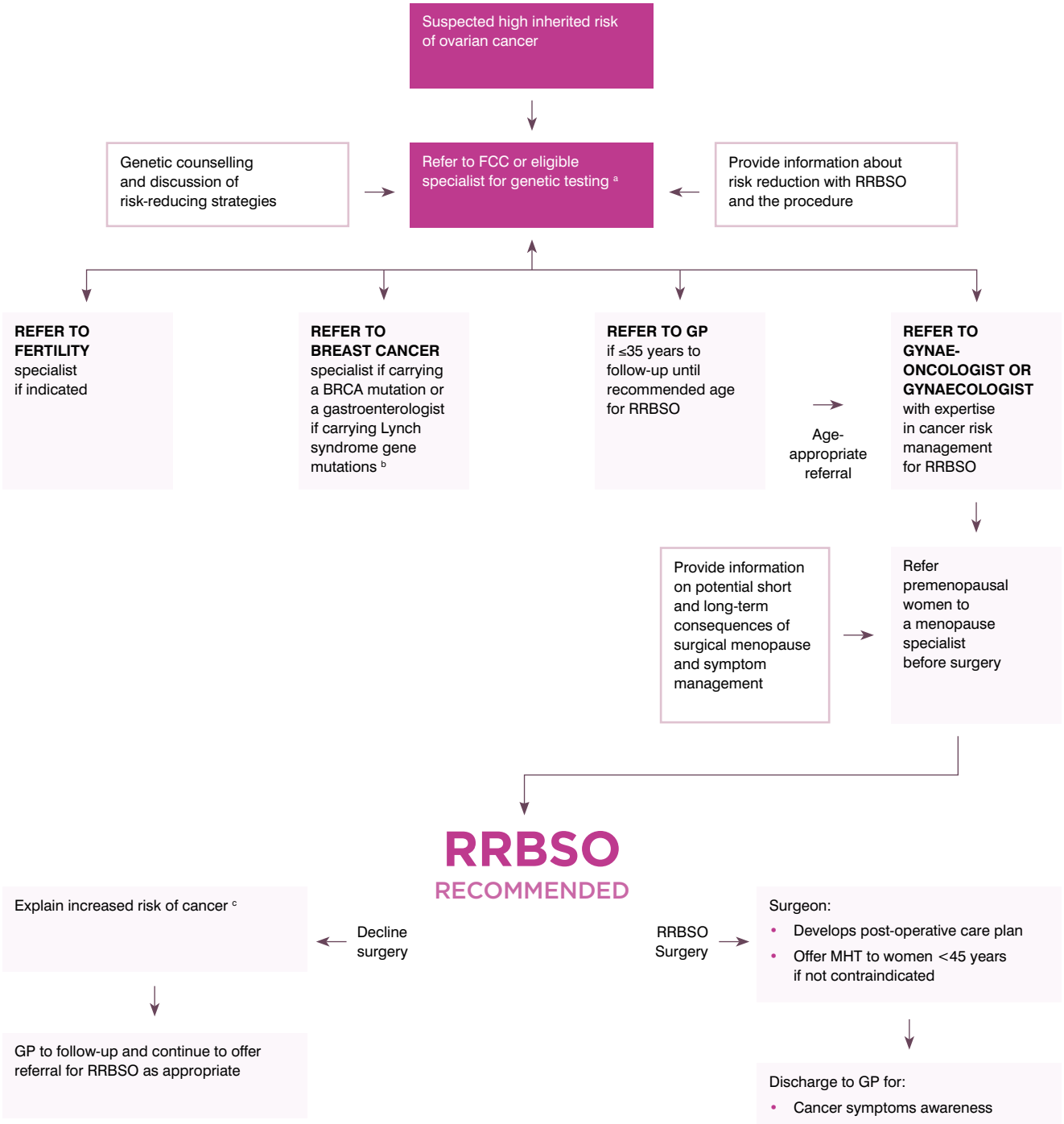
...PROVIDE EVIDENCE-BASED INFORMATION TO REDUCE THE RISK OF LONG-TERM DISEASE INCLUDING BONE AND CARDIOVASCULAR DISEASE

Menopause specialist

If available, women should be referred to a menopause specialist, who should:

- discuss and provide information on potential short and long-term consequences of surgical menopause and develop a plan for symptom management after RRBSO with the patient
- manage troublesome menopausal symptoms with hormonal or non-hormonal treatments as appropriate
- assess for the need for psychosocial support and refer accordingly
- communicate with the GP about management and referrals
- manage conditions such as sexual dysfunction and mood disturbance or refer appropriately
- provide evidence-based information to reduce the risk of long-term disease including bone and cardiovascular disease.

CARE PATHWAY FOR WOMEN AT INCREASED INHERITED RISK OF OVARIAN CANCER



FCC familial cancer centre; **GP** general practitioner; **MHT** menopause hormone therapy; **RRBSO** risk-reducing bilateral salpingo-oophorectomy

[a] Medicare rebate for gene testing for eligible women is available through FCC and eligible specialists

[b] Refer to guidelines on www.eviq.org.au for further care planning.

[c] There is currently no effective screening for ovarian cancer.

FURTHER READING

Topic	Website	Source
Genetic testing and referral		
Information on familial cancer risk assessment (online assessment tool) and genetic testing	canceraustralia.gov.au	Cancer Australia
Information on genetic cancer for patients and families and cancer genetics referral guideline	genetics.edu.au	NSW Government
Menopause information		
Osteoporosis	racgp.org.au	RACGP
A practitioner's toolkit for managing the menopause	ranzcog.edu.au	Monash University
Guideline on menopause	nice.org.uk	NICE
Guidelines		
Information on cancer genetics	eviq.org.au	NSW government
Resource on assessment and management	asco.org	American Society of Clinical Oncology
Cancer diagnosis and treatment guideline for general practitioners	cancer.org.au/health-professionals	Cancer Council Australia
Familial breast cancer	nice.org.uk/guidance/cg164	NICE
Clinical practice guidelines on colorectal cancer	wiki.cancer.org.au/australia/Guidelines	Cancer Council Australia
Management of women at high risk for ovarian cancer: a systematic review	canceraustralia.gov.au/resources	Cancer Australia
Managing menopause	menopause.org.au	Australasian Menopause Society
A practitioner's toolkit for managing the menopause	ranzcog.edu.au/statements-guidelines	Monash University

Topic	Website	Source
Menopause-related services		
Victoria: Menopause Clinic	thewomens.org.au	Royal Women's Hospital Melbourne
Western Australia: Menopause management	womencentre.com.au	Women Centre West Leederville
Menopausal Symptoms After Cancer (MSAC) Clinic	kemh.health.wa.gov.au	King Edward Memorial Hospital
New South Wales: Menopause Centre	seslhd.health.nsw.gov.au	Royal Hospital for Women South-Eastern Sydney
South Australia: Menopause Clinic	sahealth.sa.gov.au	Flinders Medical Centre
Patient education resources		
National cancer screening programs	cancerscreening.gov.au	Australian Government
Osteoporosis	osteoporosis.org.au	Osteoporosis Australia
Women support services		
Cancer Connect: one-to-one phone support from trained volunteers	cancervic.org.au	Cancer Council Victoria
Talk to a buddy – Bowel Cancer Support Group	bowelcanceraustralia.org	Bowel Cancer Australia
Sharsheret: Support service for the Jewish community	sharsheret.org	

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Feedback

The Royal Women's Hospital aims to develop health information that is useful for women and their families. We welcome your comments at all times. If you have anything you wish to tell us about this booklet please contact the Women's at rwh.publications@thewomens.org.au.

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