

Ovarian cancer

The recognition and initial management of
ovarian cancer

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NICE clinical guideline 122

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Introduction

Ovarian cancer is the leading cause of death from gynaecological cancer in the UK, and its incidence is rising. It is the fifth most common cancer in women, with a lifetime risk of about 2% in England and Wales.

The outcome for women with ovarian cancer is generally poor, with an overall 5-year survival rate of less than 35%. This is because most women who have ovarian cancer present with advanced disease. The stage of the disease is the most important factor affecting outcome. The woman's general health at the time of presentation is also important because it affects what treatments can be used. Most women have had symptoms for months before presentation, and there are often delays between presentation and specialist referral. There is a need for greater awareness of the disease and also for initial investigations in primary and secondary care that enable earlier referral and optimum treatment.

Despite the relatively poor overall survival rates for ovarian cancer, there has been a two-fold increase in survival over the last 30 years. This has coincided with the advent of effective chemotherapy, and the introduction of platinum-based agents in particular, as well as changes in surgical practice. More recently, there has been a significant shift towards greater specialisation in the delivery of care, resulting from the implementation of the cancer service guidance 'Improving outcomes in gynaecological cancers'^[1]. It is likely that some or all of these changes have contributed to the improved survival rates, emphasising the need to ensure that women with diagnosed ovarian cancer are treated in specialist centres that can provide comprehensive cancer care.

This guideline does not cover the entire care pathway for ovarian cancer. It focuses on areas where there is uncertainty or wide variation in clinical practice with regard to the detection, diagnosis and initial management of ovarian cancer. The guideline recommendations are applicable to women with epithelial ovarian cancer (the most common type of ovarian cancer), as well as women with fallopian tube carcinoma, primary peritoneal carcinoma or borderline ovarian cancer (see section 2 for further details).

The guideline assumes that prescribers will use a drug's summary of product characteristics to inform decisions made with individual patients.

^[1] Improving outcomes in gynaecological cancers. Cancer service guidance (1999). Department of Health, National Cancer Guidance Steering Group

Patient-centred care

This guideline offers best practice advice on the care of women with suspected or diagnosed ovarian cancer.

Treatment and care should take into account patients' needs and preferences. Women with ovarian cancer should have the opportunity to make informed decisions about their care and treatment, in partnership with their healthcare professionals. If women do not have the capacity to make decisions, healthcare professionals should follow the [Department of Health's advice on consent](#) and the [code of practice that accompanies the Mental Capacity Act](#). In Wales, healthcare professionals should follow [advice on consent from the Welsh Government](#).

Good communication between healthcare professionals and patients is essential. It should be supported by evidence-based written information tailored to the patient's needs. Treatment and care, and the information patients are given about it, should be culturally appropriate. It should also be accessible to people with additional needs such as physical, sensory or learning disabilities, and to people who do not speak or read English.

If the woman agrees, families and carers should have the opportunity to be involved in decisions about treatment and care.

Families and carers should also be given the information and support they need.

Key priorities for implementation

The following recommendations have been identified as priorities for implementation.

Awareness of symptoms and signs

- Carry out tests in primary care (see section 1.1.2) if a woman (especially if 50 or over) reports having any of the following symptoms on a persistent or frequent basis – particularly more than 12 times per month^[3]:
 - persistent abdominal distension (women often refer to this as 'bloating')
 - feeling full (early satiety) and/or loss of appetite
 - pelvic or abdominal pain
 - increased urinary urgency and/or frequency.
- Carry out appropriate tests for ovarian cancer (see section 1.1.2) in any woman of 50 or over who has experienced symptoms within the last 12 months that suggest irritable bowel syndrome (IBS)^[3], because IBS rarely presents for the first time in women of this age.

Asking the right question – first tests

- Measure serum CA125 in primary care in women with symptoms that suggest ovarian cancer (see section 1.1.1).
- If serum CA125 is 35 IU/ml or greater, arrange an ultrasound scan of the abdomen and pelvis.
- For any woman who has normal serum CA125 (less than 35 IU/ml), or CA125 of 35 IU/ml or greater but a normal ultrasound:
 - assess her carefully for other clinical causes of her symptoms and investigate if appropriate
 - if no other clinical cause is apparent, advise her to return to her GP if her symptoms become more frequent and/or persistent.

Malignancy indices

-
- Calculate a risk of malignancy index I (RMI I) score^[4] (after performing an ultrasound; see recommendation 1.2.3.1) and refer all women with an RMI I score of 250 or greater to a specialist multidisciplinary team.

Tissue diagnosis

- If offering cytotoxic chemotherapy to women with suspected advanced ovarian cancer, first obtain a confirmed tissue diagnosis by histology (or by cytology if histology is not appropriate) in all but exceptional cases.

The role of systematic retroperitoneal lymphadenectomy

- Do not include systematic retroperitoneal lymphadenectomy (block dissection of lymph nodes from the pelvic side walls to the level of the renal veins) as part of standard surgical treatment in women with suspected ovarian cancer whose disease appears to be confined to the ovaries (that is, who appear to have stage I disease).

Adjuvant systemic chemotherapy for stage I disease

- Do not offer adjuvant chemotherapy to women who have had optimal surgical staging^[5] and have low-risk stage I disease (grade 1 or 2, stage Ia or 1b).

Support needs of women with newly diagnosed ovarian cancer

- Offer all women with newly diagnosed ovarian cancer information about their disease, including psychosocial and psychosexual issues, that:
 - is available at the time they want it
 - includes the amount of detail that they want and are able to deal with
 - is in a suitable format, including written information.

^[4] See also [Referral guidelines for suspected cancer](#) (NICE clinical guideline 27) for recommendations about the support and information needs of people with suspected cancer.

^[5] See [Irritable bowel syndrome in adults](#) (NICE clinical guideline 61).

^[4] See appendix D for details of how to calculate an RMI I score.

^[5] Optimal surgical staging constitutes: midline laparotomy to allow thorough assessment of the abdomen and pelvis; a total abdominal hysterectomy, bilateral salpingo-oophorectomy and infracolic omentectomy; biopsies of any peritoneal deposits; random biopsies of the pelvic and abdominal peritoneum; and retroperitoneal lymph node assessment [Winter Roach BA, Kitchener HC, Dickinson HO (2009) Adjuvant (post-surgery) chemotherapy for early stage epithelial ovarian cancer. Cochrane Database of Systematic Reviews issue 3: CD004706].

1 Guidance

The following guidance is based on the best available evidence. The [full guideline](#) gives details of the methods and the evidence used to develop the guidance.

1.1 *Detection in primary care*

Recommendations in this section update and replace recommendation 1.7.4 in [Referral guidelines for suspected cancer](#) (NICE clinical guideline 27).

1.1.1 Awareness of symptoms and signs

1.1.1.1 Refer the woman urgently^[6] if physical examination identifies ascites and/or a pelvic or abdominal mass (which is not obviously uterine fibroids)^[7].

1.1.1.2 Carry out tests in primary care (see section 1.1.2) if a woman (especially if 50 or over) reports having any of the following symptoms on a persistent or frequent basis – particularly more than 12 times per month^[7]:

- persistent abdominal distension (women often refer to this as 'bloating')
- feeling full (early satiety) and/or loss of appetite
- pelvic or abdominal pain
- increased urinary urgency and/or frequency.

1.1.1.3 Consider carrying out tests in primary care (see section 1.1.2) if a woman reports unexplained weight loss, fatigue or changes in bowel habit.

1.1.1.4 Advise any woman who is not suspected of having ovarian cancer to return to her GP if her symptoms become more frequent and/or persistent.

1.1.1.5 Carry out appropriate tests for ovarian cancer (see section 1.1.2) in any woman of 50 or over who has experienced symptoms within the last 12 months that suggest irritable bowel syndrome (IBS)^[8], because IBS rarely presents for the first time in women of this age.

1.1.2 Asking the right question – first tests

- 1.1.2.1 Measure serum CA125 in primary care in women with symptoms that suggest ovarian cancer (see section 1.1.1).
- 1.1.2.2 If serum CA125 is 35 IU/ml or greater, arrange an ultrasound scan of the abdomen and pelvis.
- 1.1.2.3 If the ultrasound suggests ovarian cancer, refer the woman urgently^[6] for further investigation^[7].
- 1.1.2.4 For any woman who has normal serum CA125 (less than 35 IU/ml), or CA125 of 35 IU/ml or greater but a normal ultrasound:
- assess her carefully for other clinical causes of her symptoms and investigate if appropriate
 - if no other clinical cause is apparent, advise her to return to her GP if her symptoms become more frequent and/or persistent.

1.2 Establishing the diagnosis in secondary care

1.2.1 Tumour markers: which to use?

- 1.2.1.1 Measure serum CA125 in secondary care in all women with suspected ovarian cancer, if this has not already been done in primary care.
- 1.2.1.2 In women under 40 with suspected ovarian cancer, measure levels of alpha fetoprotein (AFP) and beta human chorionic gonadotrophin (beta-hCG) as well as serum CA125, to identify women who may not have epithelial ovarian cancer.

1.2.2 Malignancy indices

- 1.2.2.1 Calculate a risk of malignancy index I (RMI I) score^[8] (after performing an ultrasound; see recommendation 1.2.3.1) and refer all women with an RMI I score of 250 or greater to a specialist multidisciplinary team.

1.2.3 Imaging in the diagnostic pathway: which procedures?

- 1.2.3.1 Perform an ultrasound of the abdomen and pelvis as the first imaging test in secondary care for women with suspected ovarian cancer, if this has not already been done in primary care.
- 1.2.3.2 If the ultrasound, serum CA125 and clinical status suggest ovarian cancer, perform a CT scan of the pelvis and abdomen to establish the extent of disease. Include the thorax if clinically indicated.
- 1.2.3.3 Do not use MRI routinely for assessing women with suspected ovarian cancer.

1.2.4 Tissue diagnosis

Requirement for tissue diagnosis

- 1.2.4.1 If offering cytotoxic chemotherapy to women with suspected advanced ovarian cancer, first obtain a confirmed tissue diagnosis by histology (or by cytology if histology is not appropriate) in all but exceptional cases.
- 1.2.4.2 Offer cytotoxic chemotherapy for suspected advanced ovarian cancer without a tissue diagnosis (histology or cytology) only:
- in exceptional cases, after discussion at the multidisciplinary team **and**
 - after discussing with the woman the possible benefits and risks of starting chemotherapy without a tissue diagnosis.

Methods of tissue diagnosis other than laparotomy

- 1.2.4.3 If surgery has not been performed, use histology rather than cytology to obtain a tissue diagnosis. To obtain tissue for histology:
- use percutaneous image-guided biopsy if this is feasible
 - consider laparoscopic biopsy if percutaneous image-guided biopsy is not feasible or has not produced an adequate sample.

Use cytology if histology is not appropriate.

1.3 Management of suspected early (stage I) ovarian cancer

1.3.1 The role of systematic retroperitoneal lymphadenectomy

- 1.3.1.1 Perform retroperitoneal lymph node assessment^[10] as part of optimal surgical staging^[5] in women with suspected ovarian cancer whose disease appears to be confined to the ovaries (that is, who appear to have stage I disease).
- 1.3.1.2 Do not include systematic retroperitoneal lymphadenectomy (block dissection of lymph nodes from the pelvic side walls to the level of the renal veins) as part of standard surgical treatment in women with suspected ovarian cancer whose disease appears to be confined to the ovaries (that is, who appear to have stage I disease).

1.3.2 Adjuvant systemic chemotherapy for stage I disease

- 1.3.2.1 Do not offer adjuvant chemotherapy to women who have had optimal surgical staging^[11] and have low-risk stage I disease (grade 1 or 2, stage Ia or Ib).
- 1.3.2.2 Offer women with high-risk stage I disease (grade 3 or stage Ic) adjuvant chemotherapy consisting of six cycles of carboplatin.
- 1.3.2.3 Discuss the possible benefits and side effects of adjuvant chemotherapy with women who have had suboptimal surgical staging^[11] and appear to have stage I disease.

1.4 Management of advanced (stage II–IV) ovarian cancer

Note that recommendations 1.1 and 1.2 in NICE technology appraisal guidance 55 ([Guidance on the use of paclitaxel in the treatment of ovarian cancer](#)) are on first-line chemotherapy in the treatment of ovarian cancer.

1.4.1 Primary surgery

1.4.1.1 If performing surgery for women with ovarian cancer, whether before chemotherapy or after neoadjuvant chemotherapy, the objective should be complete resection of all macroscopic disease.

1.4.2 Intraperitoneal chemotherapy

1.4.2.1 Do not offer intraperitoneal chemotherapy to women with ovarian cancer, except as part of a clinical trial.

1.5 *Support needs of women with newly diagnosed ovarian cancer*

1.5.1.1 Offer all women with newly diagnosed ovarian cancer information about their disease, including psychosocial and psychosexual issues, that:

- is available at the time they want it
- includes the amount of detail that they want and are able to deal with
- is in a suitable format, including written information.

1.5.1.2 Ensure that information is available about:

- the stage of the disease, treatment options and prognosis
- how to manage the side effects of both the disease and its treatments in order to maximise wellbeing
- sexuality and sexual activity
- fertility and hormone treatment
- symptoms and signs of disease recurrence
- genetics, including the chances of family members developing ovarian cancer
- self-help strategies to optimise independence and coping

- where to go for support, including support groups
- how to deal with emotions such as sadness, depression, anxiety and a feeling of a lack of control over the outcome of the disease and treatment.

^[6] An urgent referral means that the woman is referred to a gynaecological cancer service within the national target in England and Wales for referral for suspected cancer, which is currently 2 weeks.

^[7] See also [Referral guidelines for suspected cancer](#) (NICE clinical guideline 27) for recommendations about the support and information needs of people with suspected cancer.

^[8] See [Irritable bowel syndrome in adults](#) (NICE clinical guideline 61).

^[9] See appendix D for details of how to calculate an RMI I score.

^[10] Lymph node assessment involves sampling of retroperitoneal lymphatic tissue from the para-aortic area and pelvic side walls if there is a palpable abnormality, or random sampling if there is no palpable abnormality.

^[11] Optimal surgical staging constitutes: midline laparotomy to allow thorough assessment of the abdomen and pelvis; a total abdominal hysterectomy, bilateral salpingo-oophorectomy and infracolic omentectomy; biopsies of any peritoneal deposits; random biopsies of the pelvic and abdominal peritoneum; and retroperitoneal lymph node assessment [Winter Roach BA, Kitchener HC, Dickinson HO (2009) Adjuvant (post-surgery) chemotherapy for early stage epithelial ovarian cancer. Cochrane Database of Systematic Reviews issue 3: CD004706].

2 Notes on the scope of the guidance

NICE guidelines are developed in accordance with a scope that defines what the guideline will and will not cover. The scope of this guideline is [available](#) – click on 'How this guidance was produced'.

Groups that are covered

- Adult women (18 years and older) with epithelial ovarian cancer.
- Adult women with fallopian tube carcinoma.
- Adult women with primary peritoneal carcinoma.
- Adult women with suspected ovarian or primary peritoneal carcinoma.
- Adult women with borderline ovarian cancer.

Groups that are not covered

- Children (younger than 18 years) with ovarian malignancy.
- Women with pseudomyxoma peritonei.
- Women with relapsed ovarian, fallopian tube or peritoneal cancer.
- Women with germ cell tumours of the ovary.
- Women with sex cord stromal tumours of the ovary.

How this guideline was developed

NICE commissioned the National Collaborating Centre for Cancer to develop this guideline. The Centre established a Guideline Development Group (see appendix A), which reviewed the evidence and developed the recommendations. An independent Guideline Review Panel oversaw the development of the guideline (see appendix B).

There is more information about [how NICE clinical guidelines are developed](#) on the NICE website and in [How NICE clinical guidelines are developed: an overview for stakeholders, the public and the NHS](#).

3 Implementation

NICE has developed [tools](#) to help organisations implement this guidance.

4 Research recommendations

The Guideline Development Group has made the following recommendations for research, based on its review of evidence, to improve NICE guidance and patient care in the future.

4.1 Relationship between duration of symptoms of ovarian cancer and stage at diagnosis

Further research should be undertaken on the relationship between the duration and frequency of symptoms in women with ovarian cancer before diagnosis, the stage of disease at diagnosis and subsequent survival.

Why this is important

Most women presenting with ovarian cancer have advanced disease and have had symptoms for months. Greater awareness among both women and healthcare professionals might result in women presenting earlier with less advanced disease, leading to better outcomes. There is insufficient understanding of the factors that influence earlier diagnosis in women with ovarian cancer, especially the relationship between duration of symptoms and stage at diagnosis. Data demonstrating benefits from earlier presentation will justify investment in raising awareness among women and healthcare professionals. This is likely to be a population-based study that records both the duration and frequency of symptoms.

4.2 RMI I (risk of malignancy index I) threshold for women with suspected ovarian cancer

Further research should be undertaken to determine the optimum RMI I threshold that should be applied in secondary care to guide the management of women with suspected ovarian cancer.

Why this is important

Variation exists in the current evidence base with regard to the optimum RMI I threshold that should be applied in secondary care. The cut-off levels used will have implications for both the management options considered and the number of women who will be referred for specialist treatment. Therefore it is important to establish the relative sensitivities and specificities at the

different levels. The research should be a prospective observational cohort study evaluating women referred with suspected ovarian cancer. Diagnostic accuracy, sensitivity, specificity and cost effectiveness should be examined at the different RMI I thresholds.

4.3 Imaging in the diagnostic pathway for women with ovarian cancer

Large multicentre case–control studies should be conducted to compare the accuracy of CT versus MRI for staging and for predicting optimal cytoreduction in women with ovarian cancer.

Why this is important

Currently most women with ovarian cancer will undergo a CT scan before surgery to assess the extent and resectability of disease. CT and MRI are complementary in their abilities to detect disease, but no adequate studies have been performed that compare their effectiveness in women with suspected ovarian cancer. No comparative studies have been undertaken evaluating surgical outcome. A prospective study in women undergoing primary surgery would be feasible.

4.4 The role of systematic retroperitoneal lymphadenectomy in the surgical treatment of ovarian cancer

A prospective randomised trial should be undertaken to evaluate the therapeutic effect, associated risks and cost effectiveness of systematic retroperitoneal lymphadenectomy in women with ovarian cancer whose disease appears to be confined to the ovaries.

Why this is important

Systematic retroperitoneal lymphadenectomy is an untested procedure but is likely to be more accurate than lymph node sampling, with a potential benefit for the woman of avoiding chemotherapy. However, increased risks are associated with it. Although there may be no overall survival advantage of this procedure, avoidance of chemotherapy and impact on quality of life may make it attractive to some women as a treatment option. In order to counsel women appropriately it is essential to understand fully the risks associated with this surgery as well as

the benefits. Researchers should be encouraged to develop a prospective randomised trial with international collaboration to answer this question in a timely manner.

4.5 The value of primary surgery for women with advanced ovarian cancer

Research should be undertaken to determine the effectiveness of primary surgery for women with advanced ovarian cancer whose tumour cannot be fully excised.

Why this is important

Most women with advanced ovarian cancer undergo surgery at some point. Previous studies have shown that surgery after the completion of chemotherapy has no therapeutic value. Studies are being performed to investigate whether the timing of surgery during primary chemotherapy influences outcome. No studies have evaluated whether primary surgery itself has any therapeutic value when compared with chemotherapy alone. The potential advantages of surgery have to be offset against the morbidity, occasional mortality and undoubted costs associated with it. This would be a prospective randomised clinical trial recruiting women who have biopsy-proven advanced ovarian cancer and who are fit enough to receive surgery and chemotherapy. Women would be randomised to either chemotherapy and surgery (conventional arm) or chemotherapy alone (experimental arm). Primary outcome measures would be survival at 1 and 5 years.

5 Other versions of this guideline

5.1 Full guideline

The full guideline, [Ovarian cancer: the recognition and initial management of ovarian cancer](#), contains details of the methods and evidence used to develop the guideline. It is published by the National Collaborating Centre for Cancer.

5.2 Information for the public

NICE has produced [information for the public](#) explaining this guideline.

We encourage NHS and voluntary sector organisations to use text from this information in their own materials about ovarian cancer.

6 Related guidance

Published NICE guidance

- [Irritable bowel syndrome in adults](#). NICE clinical guideline 61 (2008).
- [Referral guidelines for suspected cancer](#). NICE clinical guideline 27 (2005).
- [Improving supportive and palliative care for adults with cancer](#). Cancer service guidance (2004).
- [Guidance on the use of paclitaxel in the treatment of ovarian cancer](#). NICE technology appraisal guidance 55 (2003).

Other cancer service guidance

- [Improving outcomes in gynaecological cancers](#). [Cancer service guidance](#) (1999).
Department of Health, National Cancer Guidance Steering Group.

7 Updating the guideline

NICE clinical guidelines are updated so that recommendations take into account important new information. New evidence is checked 3 years after publication, and healthcare professionals and patients are asked for their views; we use this information to decide whether all or part of a guideline needs updating. If important new evidence is published at other times, we may decide to do a more rapid update of some recommendations. Please see our website for information about updating the guideline.

Appendix A: The Guideline Development Group, National Collaborating Centre and NICE project team

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Appendix B: The Guideline Review Panel

The Guideline Review Panel is an independent panel that oversees the development of the guideline and takes responsibility for monitoring adherence to NICE guideline development processes. In particular, the panel ensures that stakeholder comments have been adequately considered and responded to. The panel includes members from the following perspectives: primary care, secondary care, lay, public health and industry.

Dr John Hyslop – Chair

Consultant Radiologist, Royal Cornwall Hospital NHS Trust

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Appendix C: The algorithms

The [full version of the guideline](#) contains the algorithms.

Appendix D: Risk of malignancy index (RMI I)

RMI I combines three pre-surgical features: serum CA125 (CA125), menopausal status (M) and ultrasound score (U). The RMI is a product of the ultrasound scan score, the menopausal status and the serum CA125 level (IU/ml).

$$\text{RMI} = \text{U} \times \text{M} \times \text{CA125}$$

- The ultrasound result is scored 1 point for each of the following characteristics: multilocular cysts, solid areas, metastases, ascites and bilateral lesions. U = 0 (for an ultrasound score of 0), U = 1 (for an ultrasound score of 1), U = 3 (for an ultrasound score of 2–5).
- The menopausal status is scored as 1 = pre-menopausal and 3 = post-menopausal
- The classification of 'post-menopausal' is a woman who has had no period for more than 1 year or a woman over 50 who has had a hysterectomy.
- Serum CA125 is measured in IU/ml and can vary between 0 and hundreds or even thousands of units.

About this guideline

NICE clinical guidelines are recommendations about the treatment and care of people with specific diseases and conditions in the NHS in England and Wales.

The guideline was developed by the National Collaborating Centre for Cancer. The Collaborating Centre worked with a group of healthcare professionals (including consultants, GPs and nurses), patients and carers, and technical staff, who reviewed the evidence and drafted the recommendations. The recommendations were finalised after public consultation.

This guidance updates and replaces recommendation 1.7.4 in [Referral guidelines for suspected cancer](#) (NICE clinical guideline 27; published June 2005).

The methods and processes for developing NICE clinical guidelines are described in [The guidelines manual](#).

We have produced [information for the public](#) explaining this guideline. Tools to help you put the guideline into practice and information about the evidence it is based on are also [available](#).

Changes after publication

January 2012: minor maintenance

February 2013: minor maintenance

March 2013: minor maintenance

Your responsibility

This guidance represents the view of NICE, which was arrived at after careful consideration of the evidence available. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. However, the guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer, and informed by the summary of product characteristics of any drugs they are considering.

Implementation of this guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to avoid unlawful discrimination and to have regard to promoting equality of opportunity. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties.

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