

## **Ovarian cancer**

*A guide for journalists on  
ovarian cancer and its treatment*



# Contents

<b>Contents</b>	<b>2</b>
<b>Overview</b>	<b>3</b>
<b>Section 1: Ovarian Cancer</b>	<b>4</b>
i. Types of ovarian cancer	4
ii. Causes and risk factors	5
iii. Symptoms and diagnosis	5
iv. Staging	6
<b>Section 2: Epidemiology</b>	<b>7</b>
i. Incidence & mortality	7
ii. Prognosis	8
<b>Section 3: Treatment</b>	<b>9</b>
i. Surgery	9
ii. Chemotherapy	9
<b>References</b>	<b>10</b>

## Overview

*Ovarian cancer is diagnosed in nearly a quarter of a million women globally each year. It is the eighth most common cancer in women and the seventh leading cause of cancer death among women, responsible for approximately 140,000 deaths each year. It has the highest mortality rate of all gynaecological cancers.<sup>1</sup>*

The prognosis for ovarian cancer patients is poor, particularly when the disease is diagnosed in its later stages.<sup>2</sup> Symptoms are ambiguous and often misdiagnosed<sup>3, 4</sup> so the majority of patients are only identified in the advanced stages of the disease.<sup>2</sup> Ovarian cancer is therefore often referred to as “The Silent Killer”.

The current standard of care for ovarian cancer - surgery and chemotherapy - has remained unchanged for many years and the 5-year US survival rate has improved by only 9% since 1975.<sup>5</sup> Statistics show that just 45% of women with ovarian cancer are likely to survive for five years compared to up to 89% of women with breast cancer.<sup>6, 7</sup>

In most cases front-line treatment (with surgery and chemotherapy) does not stop the disease returning. Most women with advanced ovarian cancer will have a relapse following initial treatment, usually within 15 months of initial diagnosis.<sup>8</sup> There is a real need for new, more effective treatment options for women with ovarian cancer.

This guide provides an overview of ovarian cancer, including its incidence, risk factors, symptoms, diagnosis and treatment options.

# Section 1

## Ovarian cancer

### i. Types of ovarian cancer

The vast majority (over 90%) of ovarian tumours arise from the uncontrolled growth and replication of epithelial cells which form the surface of the ovary. Cancer involving this type of cell is known as epithelial ovarian cancer.<sup>9</sup> Other types of ovarian cancer develop from the egg-producing germ cells or the connective

tissue around the ovary known as stromal cells.<sup>10</sup> If detected at a very early stage, ovarian cancers can usually be removed surgically and this can be potentially curative. However, there are often no clearly identifiable initial symptoms and in the majority of cases the cancer has spread to other parts of the body (metastasised) before the patient is diagnosed.

Figure 1 Anatomy of ovaries

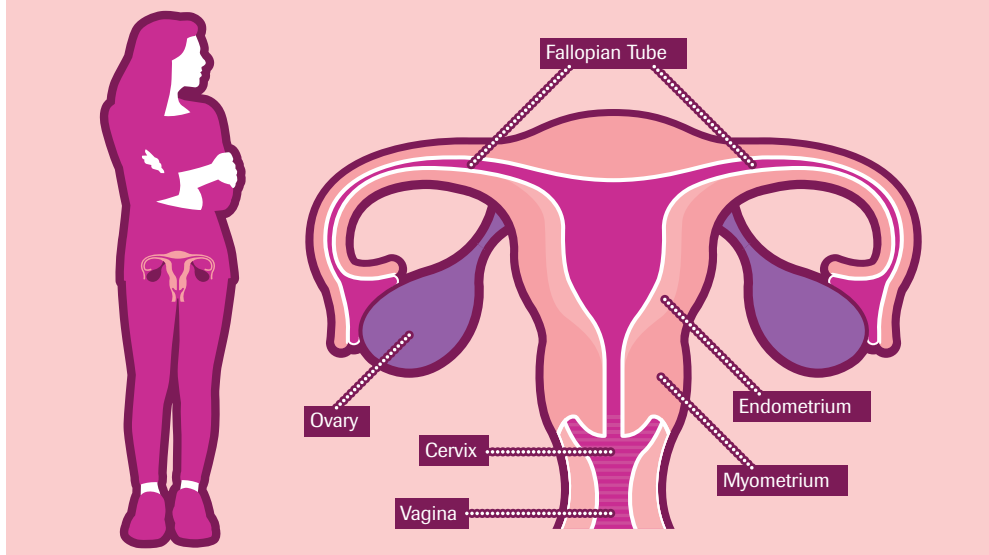
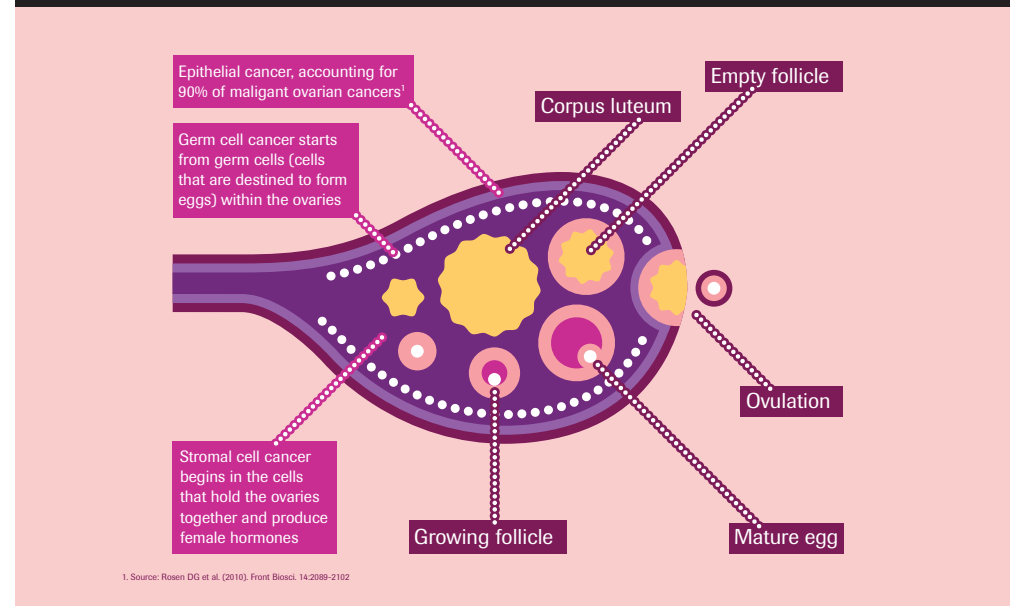


Figure 2 Types of ovarian cancer



## ii. Causes and risk factors

The underlying mechanism that leads to ovarian cancer is not well understood, but it is thought to be linked to reproduction and ovulation. A number of factors may increase a woman's risk of developing ovarian cancer:

**Family history:** If a woman's mother or sister has had ovarian, breast, or uterine cancer she is at greater risk of developing ovarian cancer.<sup>11</sup>

**Age:** The risk of ovarian cancer increases with age. Women over 50 have the highest risk of developing ovarian cancer.<sup>12</sup>

**Childbirth and menopause:** Women who have not had children, never taken the contraceptive pill, who started menstruating at an early age or whose menopause started later than average have a higher risk of developing ovarian cancer. Most ovarian cancers are diagnosed after the menopause.<sup>11</sup>

**Genetics:** Certain genetic traits can also increase the risk of developing ovarian

cancer. For example women with mutations in the BRCA1 or BRCA2 genes (1 in every 500 women) have a 23-54% risk of developing ovarian cancer.<sup>12</sup>

### Previous gynaecological problems:

Women who have previously had ovarian cysts or endometriosis are also more likely to develop ovarian cancer.<sup>12</sup>

**Lifestyle:** Obesity, smoking and a sedentary lifestyle are linked to an increased risk of ovarian cancer.<sup>12</sup>

## iii. Symptoms and diagnosis

Early diagnosis has the potential to improve survival rates but symptoms of ovarian cancer, particularly in the early stages may be ambiguous and non-specific making early diagnosis difficult.<sup>3</sup> They can be confused with symptoms of other less severe diseases, particularly gastrointestinal complaints. In addition, there is no routine, simple test to accurately and reliably detect ovarian cancer in the general population so reliable screening for the disease is not yet feasible.<sup>13</sup>

This means the majority of women are not diagnosed until the disease has reached an advanced stage when the tumour may be large and could have spread (metastasised) to other parts of the body. Approximately 70% of women with ovarian cancer are diagnosed at stage III or IV (see staging) of the disease.<sup>12</sup>

Cancerous cells can greatly increase the volume of peritoneal fluid (the natural fluid that coats and lubricates the lining of the abdomen and covers internal organs) in ovarian cancer. This can cause the build up of fluid in the abdomen called ascites which is a common complication of ovarian cancer that can cause swelling, fatigue and shortness of breath.

Being aware of the frequency and combination of certain symptoms can help with early diagnosis. Symptoms to watch out for include:<sup>4, 14</sup>

Persistent bloating  
Abdominal pain

Irregular periods

Loss of appetite

Fatigue

Change in bowel movements - constipation, excess wind

Abnormal vaginal bleeding

Methods of diagnosis vary from country to country but typically when a woman goes to her doctor with symptoms, she will be given a physical examination. If this raises any concerns, a number of additional tests may be performed:

- A blood test to check for raised levels of a protein in the blood called CA-125
- An MRI (Magnetic Resonance Imaging) or CT (Computerised (Axial) Tomography) scan
- Ultrasound<sup>15</sup>

Exploratory surgery of the abdomen known as a laparotomy, or less invasive keyhole surgery known as a laparoscopy, is required to confirm diagnosis and determine how advanced the ovarian cancer is.<sup>8, 16</sup>

#### iv. Staging

Staging determines how advanced the cancer is and whether it has spread to other parts of the body. It helps to identify the most appropriate treatment options for the patient. Staging of ovarian cancer is confirmed along with surgery using:

biopsies

CT scans

chest X-rays

colonoscopies<sup>17</sup>

Staging is defined by the FIGO (International Federation of Gynaecology and Obstetrics) system.

#### 'Early stage disease' (stage I and II)

describes a tumour that is localised to its original site, with no spread either to lymph nodes or other areas in the body. With early stage disease there is the chance of a cure if the tumour can be successfully surgically removed.

#### 'Later stage disease' (stage III and IV)

refers to cancer that has spread from the original site, affecting the lymph nodes or reaching other parts of the body (metastases). Late stage ovarian cancer has a worse prognosis than earlier stage disease.

Table 1 The stages of ovarian cancer (FIGO)

	Stage	Classification
<b>Early stage disease</b>	Stage I	Tumour confined to ovaries.
	Stage II	Tumour involving one or both ovaries and extending into tissues in the pelvic region
<b>Later stage</b>	Stage III	Tumour involving one or both ovaries and evidence of spread to the abdominal lining outside of the pelvic region
	Stage IV	Most advanced stage when cancer has spread to more distant organs e.g. lungs, liver

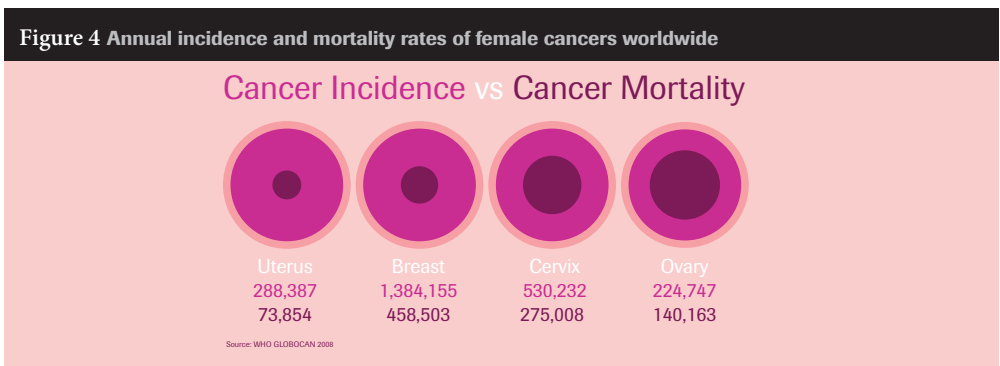
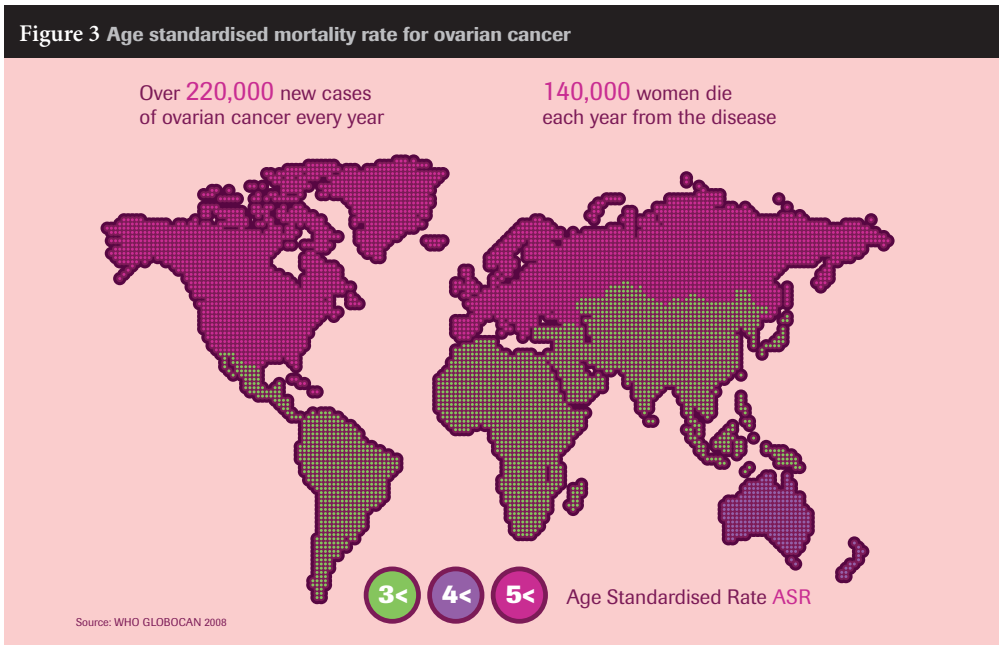
# Section 2 Epidemiology

## i. Incidence & mortality

**Worldwide** Ovarian cancer is diagnosed in nearly a quarter of a million women each year. It is the eighth most common cancer in women and the seventh leading cause of cancer death among women, responsible for approximately 140,000 deaths each year. These figures confirm that globally, ovarian cancer is the most deadly of the gynaecological cancers.<sup>1</sup>

**Europe** In 2008, there were approximately 41,448 deaths from ovarian cancer across Europe, accounting for 5.5% of all female cancer deaths. Europeans have the highest incidence of ovarian cancer and it is the fifth most commonly diagnosed female cancer in Europe.<sup>1</sup>

**North America** Ovarian cancer is the eighth most commonly diagnosed cancer in women in North America with 23,895 new cases diagnosed in 2008. It accounts for 3% of female cancer diagnoses but 5.6% of female cancer deaths in North America.<sup>1</sup>



## ii. Prognosis

Cancer statistics often use an 'overall 5-year survival rate' to give a better idea of the longer term outlook for people with a particular cancer. Over half of women diagnosed with ovarian cancer will not live beyond five years.<sup>6</sup> The overall 5-year survival rate for women with ovarian cancer is 45%. This compares to a 5-year survival rate of up to 89% in women diagnosed with breast cancer.<sup>6,7</sup> The reasons for this poor prognosis are that there is no effective screening for ovarian cancer and symptoms can be ambiguous, leading to a high percentage of cases being diagnosed at an advanced stage when the disease is more difficult to treat.

Figure 5 5-year survival rate of ovarian cancer vs. breast cancer



The overall 5-year survival rate for patients with ovarian cancer is 45%

Source: American Cancer Society. Cancer Facts and Figures 2007. Atlanta, American Cancer Society 2007.

The 5-year survival rate for patients with breast cancer is up to 89%

Source: American Cancer Society. Breast Cancer Facts and Figures 2009-2010. Atlanta, American Cancer Society, Inc.



# Section 3

## Treatment

Treatment options vary depending on the stage of the cancer, and are assessed taking into account the following variables:

Tumour size

Tumour position

Degree of spread

Patient's physical condition

Until recently treatment options for ovarian cancer were limited to surgery and chemotherapy. However in 2011, the European Commission (EC) announced the approval of a biological therapy in combination with standard chemotherapy (carboplatin and paclitaxel) as initial treatment for advanced (stages III B, III C and IV) epithelial ovarian, fallopian tube, or primary peritoneal cancer. This marked the first new effective treatment option for women with advanced ovarian cancer in 15 years. Radiotherapy is not frequently used to treat ovarian cancer.

### i. Surgery

Surgery is used to remove as much of the tumour as possible. This is known as debulking surgery or cytoreduction. Patients most commonly have both ovaries removed (bilateral oophorectomy) and a hysterectomy (removal of the uterus). In young women who wish to remain fertile, only the affected ovary is removed and the uterus is left in place. In patients diagnosed with early disease, surgery alone is usually sufficient but in advanced disease, debulking surgery followed by chemotherapy is recommended.<sup>15</sup>

### ii. Chemotherapy

Chemotherapy after surgery is referred to as 'front-line' or 'first-line' treatment and involves a combination of a platinum and taxane-based chemotherapy (usually carboplatin and paclitaxel). Patients with advanced ovarian cancer who aren't initially able to undergo surgery due to large ascites or invasive tumours can be treated with chemotherapy before being considered for surgery (neoadjuvant treatment).<sup>8</sup>

Ovarian cancer usually responds to chemotherapy but unfortunately, in the majority of cases the cancer returns (known as "relapse" or "recurrence"), resulting in half of patients eventually dying from the disease.<sup>2</sup>

When the cancer returns, the only currently available treatment option is further chemotherapy. The choice of chemotherapy at this stage depends on how quickly the cancer has returned.

### iii. Biological therapies

Biological therapies are a new approach to treating advanced ovarian cancer. They are typically given in combination with chemotherapy and represent the first new treatment option for women in many years.

# References

- 1 WHO, IARC GLOBOCAN, Cancer Incidence and Mortality Worldwide in 2008 at <http://globocan.iarc.fr/>
- 2 Heintz APM, Odicino F, Maisonneuve P, et al. Int J Gynaecol Obstet 2006;95 (Suppl 1):S161-92
- 3 Goff BA, Mandel L, Muntz HG, Melancon CH. Cancer 2000;89:2068-75
- 4 Goff BA, Mandel L, Melancon CH, Muntz HG. JAMA 2004;291:2705-12
- 5 Jemal A, Siegel R, Xu J, Ward E.. CA Cancer J Clin 2010;60:277-300
- 6 American Cancer Society. Cancer Facts and Figures 2007. Atlanta, American Cancer Society 2007
- 7 American Cancer Society. Breast Cancer Facts and Figures 2009-2010. Atlanta. American Cancer Society Inc.
- 8 Hennessy B et al. Lancet 2009; 9698: 1371-1382
- 9 Rosen DG et al. (2010). Front Biosci. 14:2089-2102
- 10 Cancer Research UK. Types of ovarian cancer. Last accessed March 2011 at <http://www.cancerhelp.org.uk/type/ovarian-cancer/about/types-of-ovarian-cancer>
- 11 Permuth-Wey and Sellers. Epidemiology of Ovarian Cancer. Methods of Molecular Biology, Cancer Epidemiology. 2009;472:413-37
- 12 Roett MA, Evans P. American Academy of Family Physicians (2009). 80(6):609-616
- 13 Badgwell D, Bast RC. Markers 2007;23:397-410
- 14 Gynecologic Cancer Foundation Ovarian Cancer Symptoms Consensus Statement. Last accessed March 2011 at [http://www.wcn.org/articles/types\\_of\\_cancer/ovarian/symptoms/index.html](http://www.wcn.org/articles/types_of_cancer/ovarian/symptoms/index.html)
- 15 Gubbels JAA et al. Journal of Ovarian Research (2010) 3:8.
- 16 NHS treatment. Last accessed March 2011 at <http://www.nhs.uk/Conditions/Ovarian-cyst/Pages/Treatment.aspx>
- 17 Medicine Net. Ovarian Cancer Staging. Last accessed March 2011 at: [http://www.medicinenet.com/ovarian\\_cancer/page4.htm](http://www.medicinenet.com/ovarian_cancer/page4.htm)