OXFORD UNIVERSITY
BIOTECH SOCIETY

# Therapeutic Landscape of Ovarian Cancer

## An assessment of current treatments and needs for emerging therapeutics

**Authors:** Ramy Alesi Slama, Angela Sun, Qiaochu Zhang, Roman Doll, Nilendu Shubham, Tracy Boakye Serebour

**Advisors:** Ian Hsu, Isobel Johns

# Contents

# Executive Summary

**Ovarian cancer remains one of the most lethal gynaecological malignancies, characterised by high mortality rates due to late-stage diagnosis and limited treatment options for recurrent disease.** Despite advancements in oncology, most cases are detected in advanced stages, where survival rates are significantly lower. Current treatment approaches rely on a combination of surgery, chemotherapy, and targeted therapies, but challenges persist, particularly in the management of platinum-resistant ovarian cancer and ensuring broader accessibility to innovative treatments.

The ovarian cancer treatment landscape is evolving, with emerging therapies such as PARP inhibitors and angiogenesis inhibitors demonstrating improved outcomes for specific patient subgroups. However, resistance to these treatments, coupled with high costs, continues to limit their effectiveness and accessibility, especially in lower-income regions. The market for ovarian cancer therapeutics is projected to experience steady growth, driven by increasing incidence rates, enhanced diagnostics, and new treatment modalities. However, affordability and access disparities remain critical issues, particularly in regions with limited healthcare infrastructure.

Beyond treatment, early detection remains a key challenge. Current screening tools lack the sensitivity and specificity required for reliable early-stage diagnosis, emphasizing the need for novel biomarkers and improved detection strategies. Additionally, the growing role of artificial intelligence and precision medicine in drug discovery and patient management presents opportunities to revolutionize treatment approaches.

This report explores the current state of ovarian cancer treatment, market dynamics, key players, and emerging innovations. It highlights existing gaps in care, evaluates market accessibility, and examines future opportunities that could shape the landscape of ovarian cancer therapeutics. Addressing these challenges requires a collaborative effort across research, healthcare policy, and industry to improve patient outcomes and expand treatment access worldwide.

# Disease Incidence and Prevalence

## Ovarian cancer is the **7th most common malignant tumour** and the **8th leading cause of cancer-related mortality** in women worldwide[1].

Ovarian cancer (OC) is one of the most common gynaecological malignancies, following cervical and uterine cancers. It has the highest mortality rate among these cancers and is associated with a poor prognosis, with an **overall five-year survival rate of approximately 50%**[2,3]. OC primarily arises from the epithelium, stroma, or germline, with epithelial cell carcinoma being the most prevalent subtype[4]. The symptoms of OC are often nonspecific, leading to delays in diagnosis[5]. However, routine screening is not advised for individuals at average risk.

OC exhibits a distinct age distribution, with incidence increasing significantly after menopause. Epidemiological studies indicate that **most cases are diagnosed in women aged 50 years and above**, with the highest prevalence among women over 65 years. Younger patients, though less commonly affected, may present with distinct tumour subtypes or associated conditions[6]. According to the Global Burden of Disease data in 2017, Central Europe exhibits the highest incidence rates, whilst South and East Asia report the highest incidence rate when adjusted for disability-adjusted life years[7,8]. The highest mortality of OC is more significant in African populations[1].

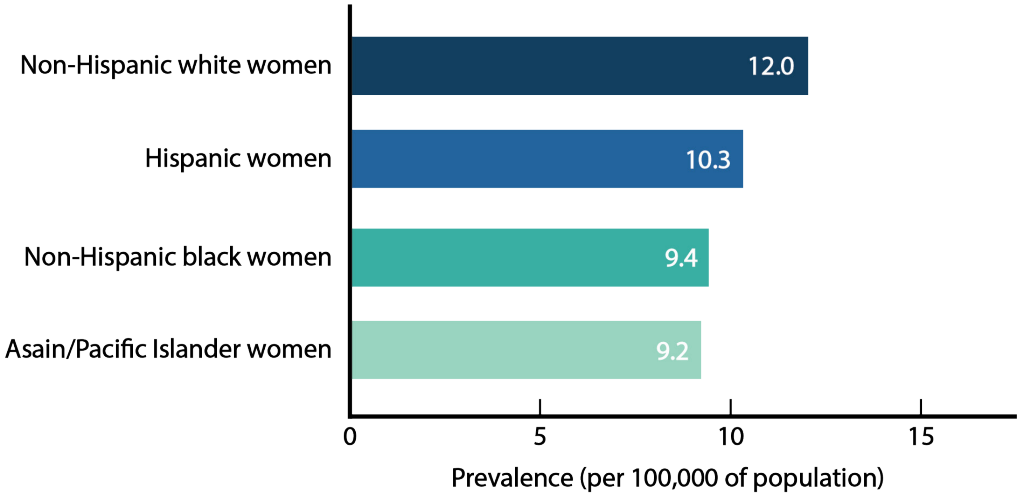



Figure 1. The prevalence of ovarian cancer[9,10]

***Risk factors***

Risk factors include **advanced age**, with peak incidence observed between 55 and 65 years, and **genetic mutations** such as in BRCA1 (25–65%), BRCA2 (10–30%), and mismatch repair genes linked to hereditary nonpolyposis colorectal cancer (~10%)[11]. **Hormonal factors**, including endometriosis, polycystic ovarian syndrome, and nulliparity, also contribute to increased risk[12].

***Protective Factors***

Protective factors include **pregnancy frequency**, prolonged **lactation**, and long-term use (≥10 years) of **oral contraceptive** pills[13].

# Patient Journey

The disease trajectory is profoundly influenced by tumour biology, patient age, genetic background, and access to timely care. Initial treatment typically includes **tumour removal surgery** followed by **chemotherapy**. However, the risk of cancer recurrence increases with disease progression, often necessitating lifelong management strategies.

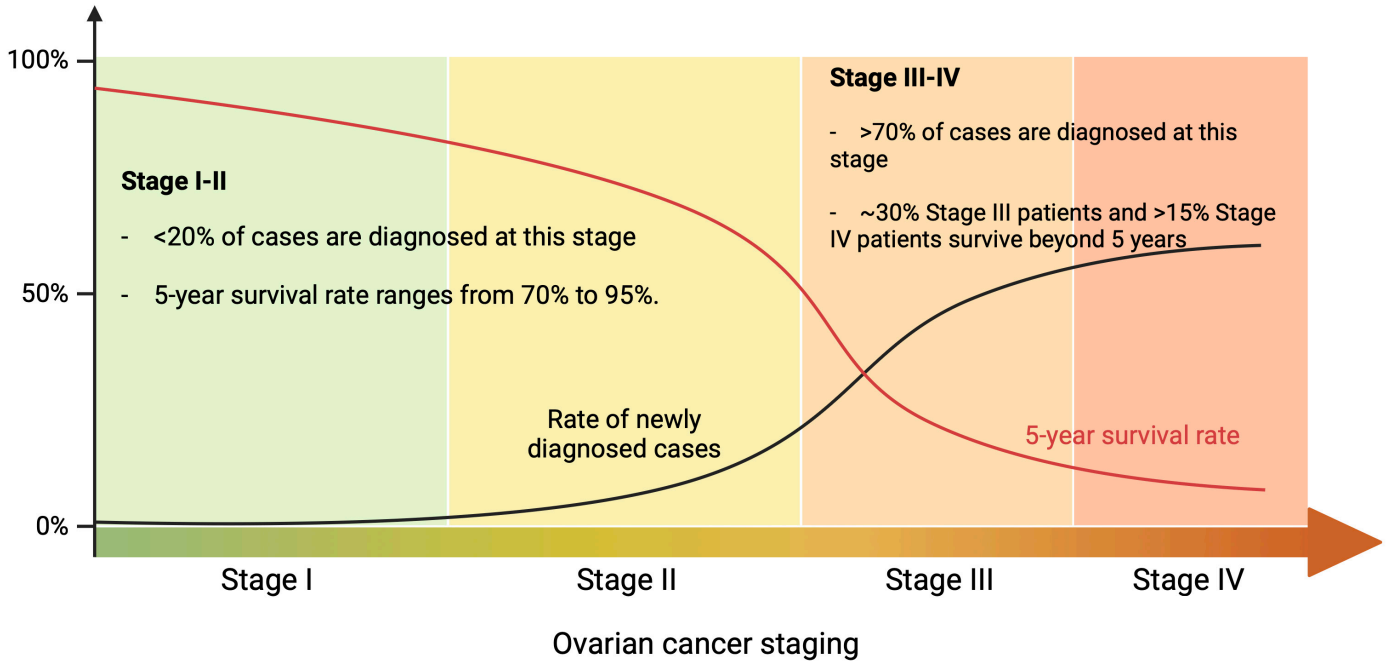



Figure 2. Disease progression and stages of ovarian cancer.

The early stage of OC often begins with non-specific and **subtle symptoms**, including fatigue, bloating, sensation of fullness, lower abdominal pain, pelvic discomfort, or changes in gastrointestinal habits[14,15]. Due to their mildness and universality, these early symptoms are **often ignored by patients** or misattributed to benign conditions, contributing to delayed diagnosis in most cases[16,17]. The development and progression of ovarian tumours are graded into four stages (I-IV)[18,19]. **Over 70% of patients are diagnosed at advanced stages**, as symptoms become noticeable and prompt medical attention[20].

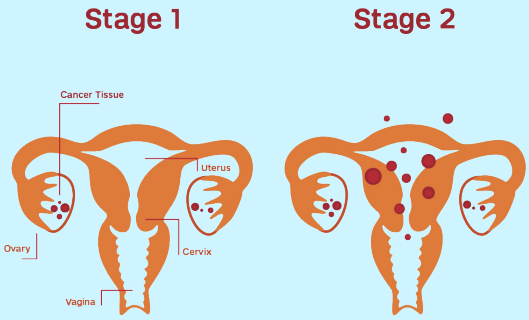
## Early Tumour Development (Stage I-II)

At this stage, undiagnosed patients, who may notice discomfort, frequently interact with **primary care physicians or general practitioners** (GPs). They give care advice and order initial investigations such as pelvic ultrasounds, CA-125 blood tests, and routine gynaecological examinations[12]. These clinical results indicate a preliminary estimate of disease severity and progression specific to OC. Once OC is suspected, the patient is referred to a **gynaecological oncologist** for further evaluation. Diagnostic confirmation relies on imaging studies (transvaginal ultrasound or CT scans)

and surgical biopsy, which provide histopathological grading and staging[12]. Women with BRCA mutations or a strong family history of OC may also undergo **genetic counselling** and enhanced surveillance, facilitating earlier detection[21,22].

## At stage I-II OC:

- Tumours start to grow in one or both ovaries, with the risk of spreading to nearby pelvic structures[12,19,23].
- Vague and non-specific symptoms lead to delayed recognition.
- Fewer than 20% of OC cases are diagnosed at this stage, with higher detection rates among women tested for BRCA mutations[20].
- Five-year survival rates exceed 90% for Stage I[24].

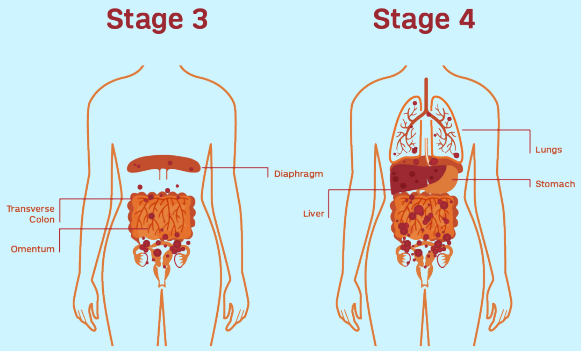



## Advanced Tumour Progression (Stage III-IV)

Most patients are not diagnosed until this stage that OC spreads to the peritoneal cavity, regional lymph nodes (Stage III), or distant organs such as the liver, lungs, and pleura (Stage IV)[12,19]. At this stage, individuals interact with multiple subunits under the healthcare system, including **emergency care services** and **oncology specialists**. Diagnosis often requires multidisciplinary teams (MDTs) comprising collaborated gynaecological oncologists, radiologists, and pathologists to confirm the stage and tumour spread through imaging, biopsies, and CA-125 monitoring.

## At stage III-IV OC:

- Tumours start to spread outside the pelvis to nearby organs and eventually beyond the abdomen[23]
- Patients manifest more pronounced symptoms and become diagnosed, further confirmed and graded through histopathological biopsy analysis.
- The five-year survival rate for advanced stages remains around 15-30%[24].




## Recurrent and chronic phase

Patients at this phase require **ongoing interaction with oncology teams** for treatment decisions, which may include further **chemotherapy, targeted therapies, and maintenance treatments**[19]. They may also be asked to volunteer in clinical trials to seek new treatment options. Meanwhile, considering the mental and physical burdens of patients, multidisciplinary care and effective care coordination are helpful to manage the quality of life for patient[3,19].

# Current Treatment Options

## First-Line Treatment

First-line treatment options and guidelines are **largely similar in the UK, Europe, North America and Australasia**. The goal behind these is to eliminate all the tumour mass that can be seen at diagnosis, as well as in adjacent areas where the tumour is likely to spread to or likely to be unseen during diagnosis[25,26]. This is attempted with a **combination of surgery and chemotherapy**, which comprises first-line treatment for OC.

## Surgical Options

***Total abdominal hysterectomy (TAH)*** is the removal of ovaries, fallopian tubes and often the uterus. In some cases, an unaffected ovary and/or fallopian tube can be left. TAH is performed on ow-grade and early-stage OC.

***Omentectomy*** is the removal of the omentum, a fatty tissue layer that covers the abdomen. If OC has spread to this tissue, or if the surgical and medical teams suspect strong possibility of an OC tumour spreading to the omentum, the removal of this tissue will be added to TAH. Omentectomy can also serve as a preventative measure.

***Debulking surgery***. Usually reserved for more advanced-staged OC. The goal of this procedure is to remove as much of visible OC as possible from the abdomen, in cases where cancer has spread to this space[27].

**The *major barrier* for improving patient access and success is the extensive and exhaustive medical training needed to perform these procedures**. In the UK, the Royal College of Obstetricians and Gynaecologists (RCOG) requires 7 additional years of dedicated specialty training programmes after the 8 year basic medical training and foundation programmes[28]. High turnover rates, increase in clinical complexity, and demographic shifts further strain the Obstetrics and Gynaecology workforce[29,30].

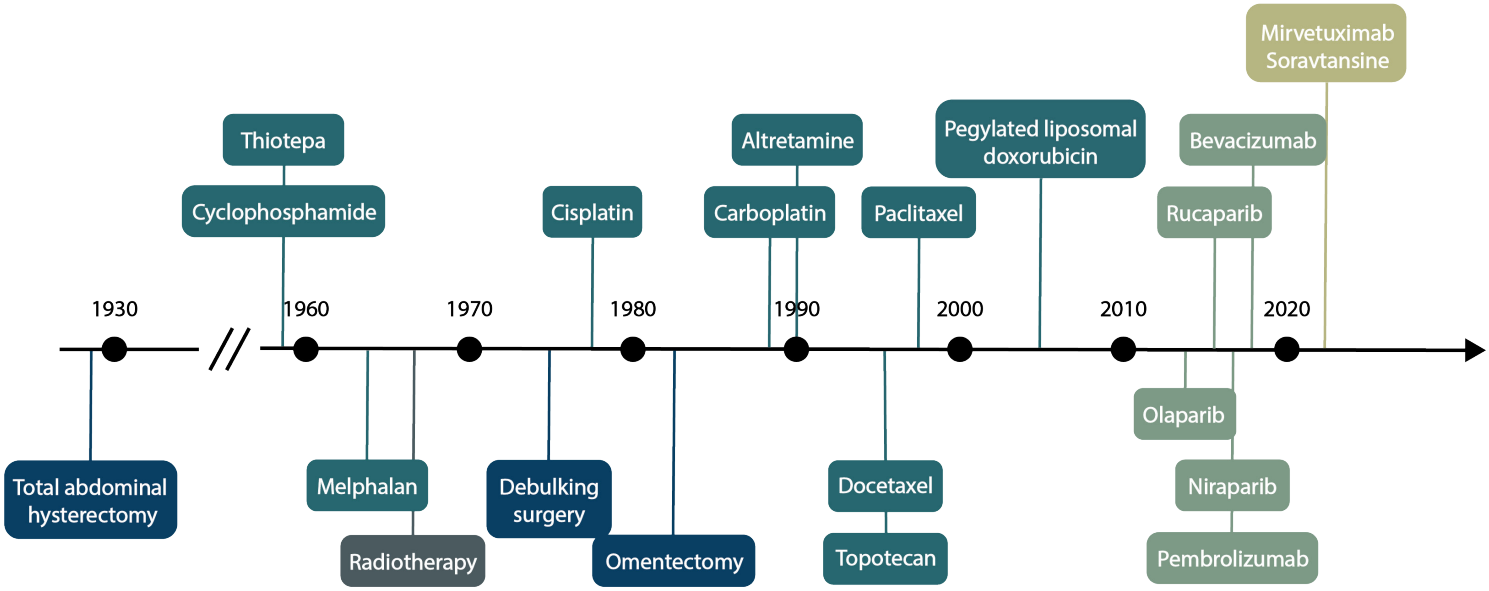



Figure 3. Timeline of approval for standard care and specialised ovarian cancer treatments[31].

## Chemotherapeutic options

***Combined Carboplatin and Paclitaxel*** **(or Docetaxel)** constitutes the chemotherapy element of first-line therapy. These are **platinum-based agents** administered intravenously, starting within a week of surgery. These drugs bind to cancer cells that are more susceptible to platinum-based chemical compounds and eliminate them.

***Neoadjuvant chemotherapy*** is used in more **advanced OC cases**, where tumours are larger and show an increased spread. A **combination of taxane and platinum chemotherapeutics agents are used before surgery** to reduce tumour mass in attempts to improve surgical outcomes[32].

***Adjuvant chemotherapy***, in the form of platinum-based agents, is administered **after surgeries**. The **dosages and cycles are often higher** as compared to first-line treatment. The scope behind these is to eliminate potentially unobserved small tumour masses as well as lingering cancer cells that have the potential to cause a relatively quick disease recurrence[33].

***Radiotherapy*** is rarely used as part of first-line therapy, but can be included in the treatment regimen of metastatic OC patients[34].

## Hormone Therapy

In a relatively rare subset of patients who have OC cases where the growth of cancer cells is fuelled by oestrogen, hormone therapy can be administered. ***Tamoxifen*** **or** ***aromatase inhibitors*** **block the body's ability to form oestrogen**, thereby add an additional layer of treatment targeting cancer cells[35].

## Targeted Therapies

Targeted therapies, although suffering from **lackluster efficacies and varied responses** in OC patients, are sometimes used as second-line treatment options if chemotherapy is ineffective or not an option. Although **less potent**, approved targeted therapies also come with **less side effects**, albeit never used before first-line treatment[36].

***Bevacizumab (Avastin),*** a monoclonal antibody, **blocks the formation of new blood vessels** by very specifically blocking the action of a protein essential to this process. This disrupts oxygen and nutrient supplies to tumour masses, which are rich in blood vessels.

***Poly ADP ribose polymerase (PARP) inhibitors*** are used in patients with specific genetic mutations (*BRCA1/2*). They block cancer cells' abilities to properly **repair damaged DNA**, hence leading to cell death.

## Treatments Differences in Developing Countries

First-line treamtent guidelines are largely similar worldwide. However, while countries with highly developed healthcare infrastructures follow similar guidelines, countries lacking resources face important challenges.

Asia, South America and Africa encompass varied healthcare systems, depending on resources available. **Targeted therapies and immunotherapies are very rarely an option** (and when they are, these are usually paid for by patients themselves). The most significant challenges lie both in the access to trained surgeons, as well as the infrastructure required to carry out full treatment courses[29,37].

# Treatment Guidelines

## Key takeaways

1. In most guidelines, surgery and conventional chemotherapy form the cornerstone of OC therapy for both early and advanced disease. Subtle region-specific differences exist regarding the treatment for different disease stages.

2. Treatment of recurrent disease follows a similar pattern, with only few additional therapeutic options being recommended for specific subgroups of patients.

3. Molecularly targeted therapies do not feature prominently in all guidelines and are mainly limited to the anti-angiogenics and PARP inhibitors. The anti-angiogenic Bevacizumab is a notable exemption, being widely recommended even in the first line setting by both US and European guidelines

## Overview of guidelines of selected organizations

### ESGO-ESMO-ESP consensus conference recommendations[38]

The recommended treatment guidelines by the European society of Gynaecological Oncology, Medical Oncology and Pathology (**ESGO, ESMO & ESP**) differentiate between initial treatment and the treatment of recurrent disease. The general recommendations for initial treatment are surgeries, with added adjuvant or neoadjuvant chemotherapies depending on disease stage and likelihood of complete surgical removal. Targeted therapies are recommended in a sub-fraction of patients with advanced or recurrent disease.

Initial treatment

At an **early stage (stage I/II)**, OC is typically treated with *complete surgical resection*, coupled with *adjuvant chemotherapy*. Chemotherapy may be omitted for adequately stage IA or IB tumours.

For **more advanced OC**, treatments often involve *primary debulking surgeries* which can be complemented with *neoadjuvant chemotherapies*. *Maintenance therapies* are frequently used in conjunction with chemotherapies - Bevacizumab with Platinum-Paclitaxcel is a widely recommoneded combination therapy.

Treatment of recurrent disease

*Secondary cytoreductive surgery* is recommended if first relapse is over 6 months since the end of first-line platinum-based chemotherapy.

*Molecularly targeted therapies* can also be used for recurrent OC. Both PARP inhibitors and Bevacizumab are recommended for use in combination with platinum-based chemotherapies, although prior exposure to either options should be taken into when deciding treatment strategies.

## British Gynaecological Cancer Society (BGCS)[39]

Similar to the ESGO-ESMO-ESP recommendations, the BGCS guidelines differentiate between initial treatment and the treatment of recurrent disease. While early-stage disease is treated with surgery alone, concomitant adjuvant or neoadjuvant chemotherapy is recommended for advanced disease. Guidelines for recurrent disease include cytoreductive surgery where possible, alongside systemic treatment with chemotherapy. Limited guidance for targeted therapies is provided.

### Initial treatment

For **early stage (stage I/II) OC**, *surgeries* should be used for the complete removal of macroscopic disease. No (neo-)adjuvant chemotherapies are recommended.

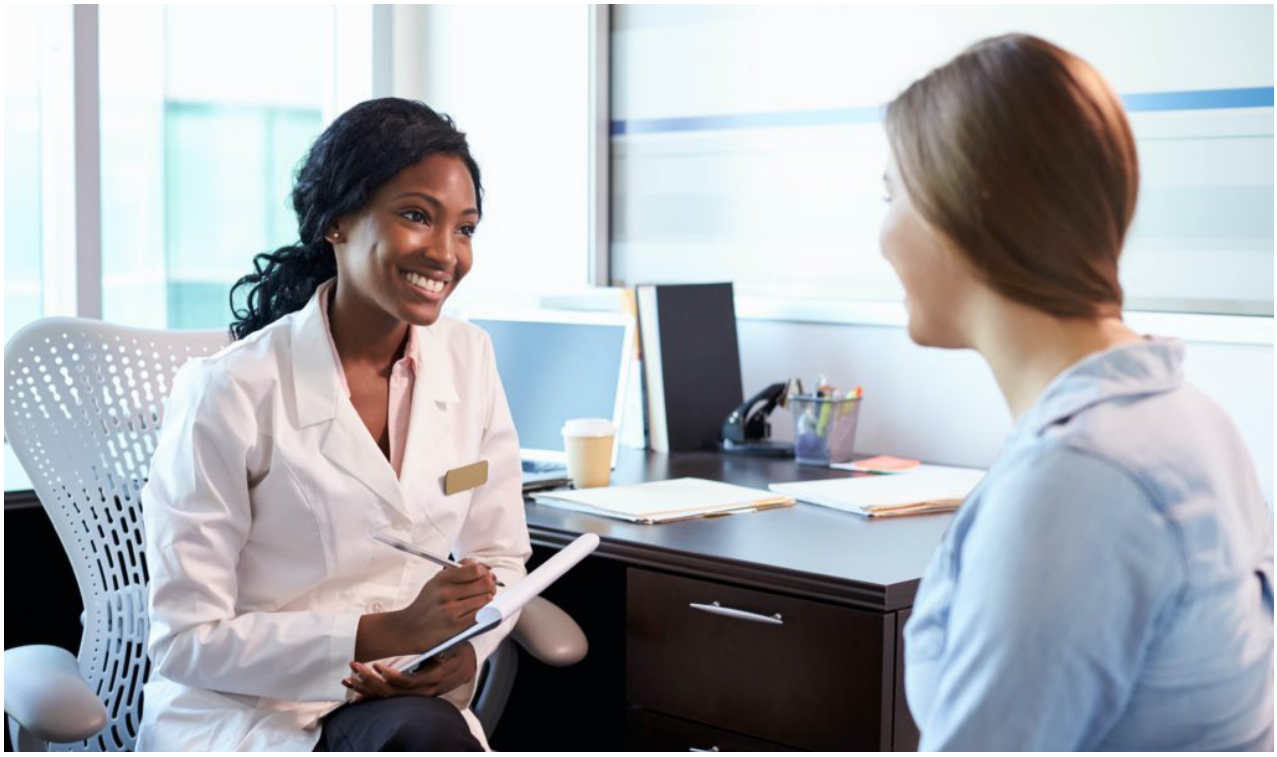
**Advanced OC** should be treated with *primary debulking surgeries* followed by *adjuvant chemotherapies*. If this is not achievable, neoadjuvant chemotherapies could be used followed by interval debulking surgeries.

In either cases, the current standard of care for chemotherapy is *Carboplatin plus Paclitaxcel* for six cycles. The addition of third agent or more cycles has failed in clinical trials. The addition of targeted therapies led to an increase in progression-free survival, but not overall survival whilst the addition of antiangiogenic agents increased toxicity.

### Treatment of recurrent disease

*Sugeries* are feasible in some cases, but there has been no prospective trials analysing their effects on patient survival.

If platinum-free interval (PFI) is over 6 months, patients can be re-challenged with *platinum-based combination therapies*. If PFI is less than 6 months, *single agent platinum therapy* can be used. The addition of *Bevacizumab* is beneficial in both platinum-sensitive and -resistant settings.



## National Cancer Institute (NCI)[40]

Like the UK and European guidelines, the NCI guidelines separate treatment according to initial vs. recurrent disease as well as according to disease stage. Targeted therapies are featured more prominently, with more emphasis on anti-angiogenics and PARP inhibitors in the treatment of initial disease.

Initial treatment

**Early stage (stage I/II) OC** is recommended to be treated with *surgeries* and *adjuvant chemotherapies*. The only exception is when patients have stage IA well-differentiated disease, in which case chemotherapy can be omitted.

The general recommendation for treating **advanced OC** is *sugery*, coupled with *adjuvant*, *platinum-based chemotherapies*. The first-line addition of *Bevacizumab* to chemotherapy is approved by FDA and generally recommended. *PARP inhibitors* can also be added for both induction and maintenance therapy as supported by results from clinical trials on BRCA mutant patients.

Treatment of recurrent or persistant disease

*Cytoreductive sugeries* can be performed. However, there lacks high-quality evidence that suggests improved patient outcomes.

Platinum-sensitive recurrent OC can be re-challenged with *platinum-based therapy*. *Bevacizumab* and/or *PARP inhibitors* can be added, though they can increase toxicity. Platinum-resistant patients are recommended to be treated by *alternative chemotherapy agents*, for example: anthracyclines, taxanes, topotecan and gemcitabine. However, they all show marginal benefits in patients.

# Unmet Medical Needs

## Early detection and diagnosis

Routine screening for early detections has shown benefit for many cancers. For example, the Pap test for cervical cancer and colonoscopy screening for colorectal cancer. Unfortunately, there is currently **no effective screening strategy for OC patients due to the lack of sensitive and specific biomarkers**[41]. Additionally, as initial symptoms of OC tend to be general and nonspecific, they are very often missed or attributed to other disease processes initially. As a result, **OC patients are frequently diagnosed at a late stage**, when symptoms become apparent and more severe, leaving them with a poor chance of survival[5].

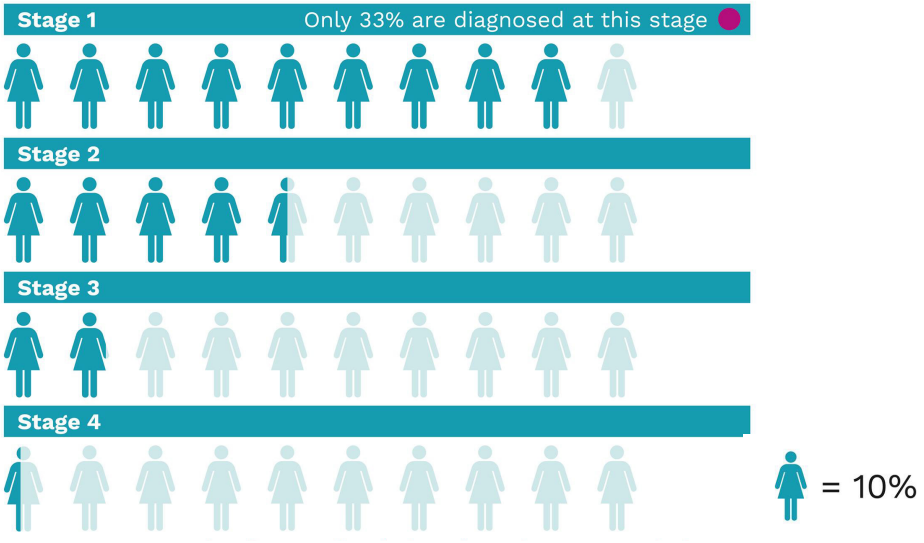



Figure 4. Ovarian cancer 5 year survival rates[42].

### Current screening approaches

*CA-125 blood test*

Women with **OC tend to have higher levels of CA-125**, a chemical secreted by cancer cells, in their bloodstream than those who do not[43]. Therefore, serum CA-125 level is a common screening biomarker used by clinicians in diagnosing OC. *However*, CA-125 test was found to **lack clinical sensitivity at the early stages of disease** as well as specificity as some benign ovarian and gynaecologic conditions can also cause elevated CA-125 levels[44]. It also has limitations in diagnosing subtypes of OC that have low CA-125 expression levels[41].

*Imaging tests*

Transvaginal ultrasound (TVUS) is the most explored method for clinicians to identify and evaluate irregular ovarian masses[5]. *However*, the **interpretation of sonograms is highly dependent on the operator's experience**[44]. Additionally, sonographic imaging also tends to have poor ability in determining malignancy in patients with borderline and early-stage lesions[41].

CA-125 tests and TVUS are often used **sequentially as a multimodal screening strategy**. Such two-stage approach where elevated CA-125 levels prompts TVUS, and

abnormal sonograms prompt surgery was reported to have improved both specificity and sensitivity in detecting OC. However, it did not result in a survival benefit in screened individuals[45].

Despite their failure at providing mortality advantage to patients, **CA-125 test and TVUS remain the most employed methods for detecting OC**. This underscores the urgent clinical need for new screening and diagnostic methods, particularly those that can detect the disease at early stages where clinical intervention remains effective.

# Platinum resistance

Although majority (75% to 80%) of OC patients tend to respond to frontline therapies, **70% of tumours will recur and eventually become resistant to platinum chemotherapies**. Historically, treatment options for patients with **platinum-resistant OC (PROC)** have been limited with a poor prognosis as they typically have low response rates with an **overall survival of less than a year**[46,47]. PROC thus represents one of the leading causes of mortality in advanced OC. However, unlike other types of OC which saw the FDA approval of multiple therapies, **only one treatment has been approved for PROC in the past decade**[31].

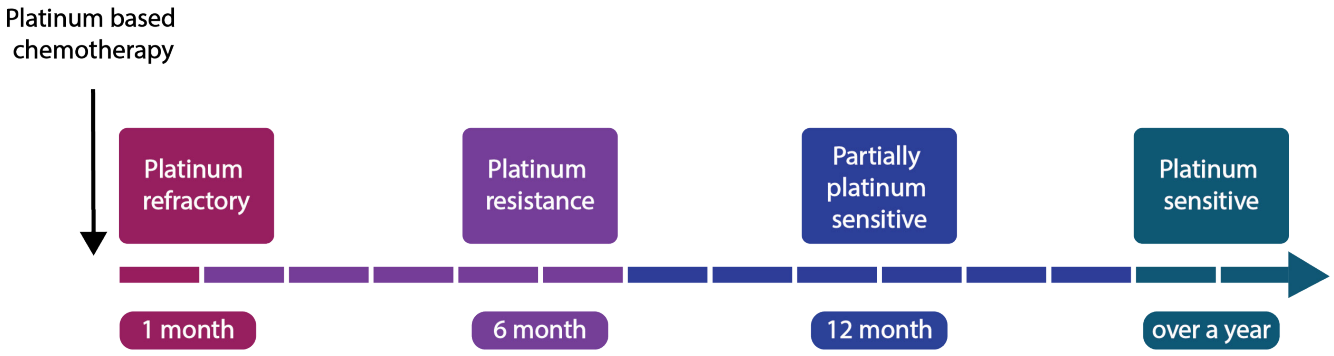



Figure 5. Classification of ovarian cancers that progress after platinum chemotherapy treatments[48].

## Current treatment options for PROC

*Nonplatinum cytotoxic agents*

Sequential use of single agent nonplatinum chemotherapy (e.g., pegylated liposomal doxorubicin, gemcitabine, paclitaxel, topotecan, etc) has been the standard of care for patients with recurrent PROC[49]. *However*, they generally have **low response rates (10%-15%)** with a **median progression free survival of only 3-4 months** and a median overall survival of 9-12 months[50]. They are also associated with significant adverse effects like neutropenia, alopecia and neuropathy[46].

*Bevacizumab*

Approved in 2014, Bevacizumab is often used in combination with chemotherapy to treat PROC patients. In the AURELIA trial, the combination therapy was reported to have **increased the progression-free survival** to 6.7 months as compared to 3.4 months of the chemotherapy alone group[51]. *However*, Bevacizumab **did not prolong overall survival** and has also been associated with adverse events like hypertension, proteinuria, haemorrhage, thrombosis and bowel perforation[46].

*PARP inhibitors*

PARP inhibitors were approved for use primarily in PROC patients with BRCA mutations and/or homologous recombination deficiency based on acceptable response rate (33% to 41%)[46]. *However*, they **share a common mechanism of resistance as platinum**, thus resistance to platinum therapies can be strongly predicative of resistance to PARP inhibitors as well[52]. Additionally, post hoc analyses suggested a potential detrimental effect on overall survival with PARP inhibitor monotherapy when compared to chemotherapy. This prompted voluntary withdrawals of olarparib, rucaparib and niraparib treatment indications for recurrent OC[53].

*Hormonal therapy*

The European Society of Medical Oncology and Gynaecological Oncology guidelines of 2019 and the US National Comprehensive Cancer Network guidelines of 2021 recommended hormonal therapy as an alternative approach to treat PROC. However, the **clinical benefits haven't been systematically evaluated** in large trials[54].

*Mirvetuximab soravtansine*

Mirvetuximab soravtansine is an antibody-drug conjugate which received accelerated FDA approval in 2022 for FR (folate receptor)-α positive PROC patients based on the MIRASOL trial[46]. It was reported to have **improved both overall survival (from 4.0 months to 5.6 months) and progression-free survival (from 12.8 months to 16.5 months)** as compared to patients receiving chemotherapies[55].

Despite the advancements in the understanding of OC and the extensive efforts in identifying new treatments for PROC, **therapeutic options for patients remain limited with minimal impact on their clinical outcomes.** Many novel molecules like cediranib, ofra-vec (antiangiogenic therapies), lurbinectedin (DNA RNA synthesis binders), avelumab and nivolumab (immunotherapies) have all failed to demonstrate a survival benefit in patients[46,56]. These unsuccessful clinical trial findings highlight the need to identify additional effective treatments for PROC patients.

# Competitive Landscape

The therapeutic landscape for OC is defined by a confluence of established pharmacologic interventions and emergent treatment paradigms, underscored by a dynamic competitive environment shaped by dominant biopharmaceutical entities, ongoing clinical innovation, and the transition toward precision oncology.

## Key existing therapies in market

*Lynparza (Olaparib)*
**AstraZeneca**'s Olaparib is a PARP inhibitor, has significantly impacted the treatment of OC, particularly in patients with BRCA mutations. The company is actively expanding its oncology portfolio with combination regimens and next-generation therapeutic application[57,58].

*Zejula (Niraparib)*
**GlaxoSmithKline (GSK)**'s Niraparib, another PARP inhibitor, is approved for maintenance treatment in OC patients independent of BRCA mutation status. Ongoing trials are exploring expanded applications to further entrench its market presence[59,60].

*Avastin (Bevacizumab)*
**Roche**'s bevacizumab, an angiogenesis inhibitor, is used in combination with chemotherapy for OC treatment. Roche continues to explore combination therapies to enhance its treatment efficacy[61].

*Rubraca (Rucaparib)*
**Pharmaand GmbH**'s Rucaparib is also a PARP inhibitor approved for the maintenance treatment of OC patients, with ongoing investigation into its combinatorial applications with immunotherapeutic agents[62].

*Elahere (Mirvetuximab soravtansine)*
**Abbvie**'s mirvetuximab is an antibody-drug conjugate approved for the treatment of patients with folate receptor-α positive PROC. The drug's efficacy in platinum-sensitive OC patients is currently under investigation[63].

## Key emerging pipeline products

*Avutometinib & Defactinib*
**Verastem Oncology**'s Avutometinib, an RAF/MEK inhibitor, in combination with **Pfizer**'s Defactinib (an FAK inhibitor) has been accepted by the FDA for Priority Review under the accelerated approval pathway for recurrent KRAS mutant OC. The company is currently enrolling patients for an international phase III trial of the combination therapy[64].

*Stenoparib*
**Allarity Therapeutics**'s stenoparib is a dual-targeted PARP/Wnt pathway inhibitor. It is currently being evaluated for the treatment of advanced recurrent OC in a phase II clinical trial. Early trial data showed encouraging and durable clinical benefits in heavily pre-treated OC patients[65,66].

*Rina-S (rinatabart sesutecan)*
**Genmab**'s rinatabart sesutecan is an antibody-drug conjugate targeting folate receptor-α. It has been granted Fast Track designation by FDA for the treatment of patients with folate receptor-α-expressing PROC. Genmab is currently recruiting patients for an international phase III study[67].

*R-Dxd (Raludotatug deruxtecan)*
**Daiichi Sankyo** and **Merck**'s Raludotatug deruxtecan is a human cadherin-6 directed antibody-drug conjugate. It showed promising activity on patients with advanced OC in a phase I study and its efficacy towards PROC patients is currently being investigated under a phase II/III trial[68].

# Pricing and Treatment Access Considerations

The cost of OC therapeutics varies significantly based on treatment modality, healthcare policy frameworks, and re-imbursement strategies.

## Treatment modalities

*Chemotherapy*

Traditional chemotherapy serves as a **frontline intervention** for OC[69]. The median total medical expenditure per patient during the first year after surgery is approximately **$93,632, with inpatient services accounting for $30,708 and outpatient services $52,700**[70]. Patients bear approximately 3% of these costs as out-of-pocket expenses[71].

*Targeted Therapies*

Innovative treatments, such as PARP inhibitors, have **significantly improved patient outcomes but come with substantial costs**[72]. For instance, patients with OC and Medicare may pay between $1 and $1,234 annually for PARP inhibitor maintenance therapy, depending on their Medicare plan[73].

## Reimbursement and treatment access

*Universal healthcare models*

In countries with universal healthcare systems, high-cost cancer treatments are typically covered, ensuring equitable access[74]. However, the **financial sustainability** of funding these expensive therapies remains a concern[75].

*Private insurance frameworks*

In the US, insurance coverage disparities can create barriers to accessing high-cost treatments[76]. Even with insurance, patients may face **significant out-of-pocket expenses**, leading to financial strain[77].

*Reimubrsement approvals*

Delays in **reimbursement approvals can impede timely access** to emerging therapies. For example, in Ireland, slow reimbursement processes have resulted in delayed access to new cancer medicines, potentially affecting patient outcomes[78].

## Key challenges to treatment penetration

1. **Economic barriers**: The high cost of novel cancer therapies poses financial challenges for healthcare systems and patients, potentially limiting the adoption of effective treatments[79].
2. **Insurance heterogeneity**: Variations in insurance coverage and reimbursement policies can lead to unequal access to treatments, affecting patient outcomes[80].
3. **Regulatory bottlenecks**: Prolonged approval processes for new therapies can delay their integration into clinical practice, impacting patient access to potentially life-saving treatments[81].

# Market Size and Growth Projections

The patient population of **OC is expected to grow** in all continents, with Africa, Latin America and Oceania projected to exhibit the largest increases in incidence and mortality. Ageing populations, increasing OC awareness, **development of healthcare infrastructures** leading to better diagnosis capabilities (notably in low- and middle-income countries) and a global shift towards acquiring lifestyles factors contributing to cancer incidences can all contribute to the rise in OC patient population[81]. As such, the global OC market is poised for significant expansion, propelled by increasing disease incidence, therapeutic innovation, and improving healthcare infrastructure.

## Market size

### The global OC market was valued at approximately **$3.6 billion** in 2023[82]

#### Distribution trends

In 2022, **hospital pharmacies held the largest revenue shares of the market, at ~45%**, primarily due to the increase in OC prevalence and healthcare spending[83]. The timely provision of drugs to OC patients and the trust they built also ensured their dominance.

**Online providers, however, are expected to benefit** from the largest compound annual growth rate (CAGR) in the next decade, at ~8.1%, driven by the **expansion of telehealth services and the increasing demand for convenient access to medications**[82,84]. This is coupled with an increased demand for oral drugs. It is predicted that drugs available in pill and capsule forms are expected to benefit from larger usage in the applicable patient population than treatments requiring more invasive routes of administration[81].

#### Regional insights

*North America* held the **largest market share** in 2023, attributed to the growing number of OC patients and advanced healthcare infrastructure[85].

*Europe* follows closely, with significant investments in healthcare and research contributing to market growth[85].

*Asia-Pacific* is expected to experience the **fastest growth** in OC market due to increasing cancer awareness, improving healthcare infrastructure, and the rise in availability of advanced therapies[86].

| | Carboplatin | Paclitaxel |
|---|---|---|
| **Manufacturers** | Bristol-Myers Squibb<br>Hospira<br>Teva Pharmaceuticals | Bristol-Myers Squibb<br>ZEE Laboratories Ltd.<br>Python Biotech |
| **Global Market Size** | 1.2 billion (2023) | 6.26 billion (2024) |
| **Projected CAGR** | 12.30% | 8.5% |

# Growth projections

## The market is projected to grow at a **CAGR of 23.8%** from **2024 to 2032**, reaching around around **$21.92 billion globally** by 2032[87]

### Drivers of Growth

*Innovations in targeted therapeutics*
The development of targeted therapies, such as PARP inhibitors and antibody-drug conjugate, have **significantly improved treatment outcomes** for OC patients[88].

*Epidemiological trends*
The **rising incidence of OC**, partly due to an aging population, has increased the demand for effective therapeutic interventions[89].

*Early detection initiatives*
Enhanced screening programs and awareness campaigns have led to **earlier diagnoses**, improving treatment efficacy[90].

*Regulatory & reimbursement advancements*
**Favourable policy frameworks** and reimbursement strategies have facilitated better access to advanced treatments[91].

*Patent expirations & competitive entry*
The **expiration of key drug patents** is anticipated to lower treatment costs and encourage the entry of generic alternatives, increasing market competition[92].

### Challenges

One of the largest challenges to the growth of OC market size is the ***shortage of healthcare workforce***. The lack of specialized gynaecological oncologists, especially in low-income regions, hampers optimal treatment delivery[93].

The ***high cost*** associated with advanced therapies, including PARP inhibitors, personalised medicines and hormone therapies, pose financial challenges for both healthcare systems and patients[94].

Regulatory hurdles can also impact patient access to OC treatments as ***prolonged approval processes*** for new therapies can delay their availabilities in the market[95].

***Limited healthcare infrastructure***, especially in low- and middle-income countries, impact patients' access to advanced oncology treatments, therefore restrict market penetration and patient outcomes as well[96].

# Future prospects for OC treatment

The current treatment landscape for OC faces multiple unmet needs in terms of diagnosis and treatment for advanced and resistant cases. Addressing the challenges in OC care will require collaborative efforts among stakeholders to enhance therapeutic options, ensure affordability and improve access for OC patients worldwide. With the projected growth in OC patient populations globally, we anticipate OC to be a key indication focus for therapeutic companies worldwide.

# Contributors

## Project Leads

Ramy is a DPhil student at the Weatherall Institute of Molecular Medicine. He utilises single-cell multi-omic approaches to parse the hetergenous landscape of solid and liquid tumours to investigate differences in treatment responses and disease progression.

**Ramy Alesi Slama** https://www.linkedin.com/in/ramyslama/

Angela is a DPhil student at the department of Biochemistry. She studies the mechanism of action and the uptake pathways of protein toxins in Gram-negative bacteria, aiming to design and engineer novel antibiotics against multidrug-resistant bacteria.

**Angela Sun** https://www.linkedin.com/in/angelasun0/

## Team Members

Qiaochu is a DPhil student at the department of Pharmacology. She studies the biochemical and mechanistic link between lysosomal storage disorders and Parkinson's disease.

**Qiaochu Zhang** https://www.linkedin.com/in/qiaochu-zhang-247238170/

Roman is a DPhil student at the Weatherall Institute of Molecular Medicine. He studies genetic treatment approaches for blood cancer, and develops genomics assays to understand the link between human genetic variations and genome function.

**Roman Doll** https://www.linkedin.com/in/romandoll/

Nilendu is an MBA student at Saïd Business School. He is a trained electrical engineer and software developer. He has worked extensively in FinTech as well as healthcare and non-profit consulting.

**Nilendu Shubham** https://www.linkedin.com/in/nileshubh/

Tracy is a medical doctor and an aspiring orthopaedic surgeon. Her research focuses on the knee, aiming to deliver a comparative single-cell and molecular portrait of degenerative soft tissue joint diseases using ancestrally inclusive musculoskeletal datasets.

**Tracy Boakye Serebour** https://www.linkedin.com/in/tracy-boakye-serebour-801a25107/

With contributions from **David Odhiambu**

## Advisors

Ian is a PhD student studying stem cell genomics, working on identifying novel regulators of hematopoietic stem cell maintenance. He was formerly a consultant at Clearview Healthcare Partners.

**Ian Hsu** https://www.linkedin.com/in/ian-hsu/

Isobel received her PhD in Biochemistry from Oxford, using gene editing and microscopy to study the 3-Dimensional organisation of our genome. She was formerly a management consultant at McKinsey & Co.

**Isobel Johns** https://www.linkedin.com/in/isobel-johns/

# References


1. Gaona-Luviano, P., Medina-Gaona, L. A. & Magaña-Pérez, K. Epidemiology of ovarian cancer. *Chin Clin Oncol.* 2020; 9, 47–47.
2. Doubeni, C. A., Doubeni, A. R. & Myers, A. E. Diagnosis and Management of Ovarian Cancer. *AFP.* 2016; 93, 937–944.
3. Garzon, S. et al. Secondary and tertiary ovarian cancer recurrence: what is the best management? *Gland Surg*. 2020; 9, 1118129–1111129.
4. McCluggage, W. G. Morphological subtypes of ovarian carcinoma: a review with emphasis on new developments and pathogenesis. *Pathology.* 2011; 43, 420–432.
5. Matulonis, U. A. et al. Ovarian cancer. *Nat Rev Dis Primers.* 2026; 2, 1–22.
6. Cancer Research UK. *Ovarian cancer incidence statistics.* https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/ovarian-cancer/incidence#heading-One.
7. American Cancer Society. *Cancer Statistics Center.* https://cancerstatisticscenter.cancer.org/.
8. Mazidimoradi, A. et al. The global, regional and national epidemiology, incidence, mortality, and burden of ovarian cancer. *Health Sci Rep*. 2022; 5, e936.
9. Momenimovahed Z, Tiznobaik A, Taheri S, Salehiniya H. Ovarian cancer in the world: epidemiology and risk factors. *Int J Womens Health. 2019;* 11: 287-299.
10. Yang D, Huang H, Ruan T, et al. Global, regional, and national burden of ovarian cancer and the attributable risk factors in all 194 countries and territories during 2007-2017: A systematic analysis of the Global Burden of Disease Study 2017. *J Obstet Gynaecol Res*. 2021; 47(12): 4389-4402.
11. National Cancer Institute. *Ovarian Cancer — Cancer Stat Facts.* https://web.archive.org/web/20240523221806/https://seer.cancer.gov/statfacts/html/ovary.html.
12. Moss E, Taylor A, Andreou A, et al. British Gynaecological Cancer Society (BGCS) ovarian, tubal and primary peritoneal cancer guidelines: Recommendations for practice update 2024. *Eur J Obstet Gynecol Reprod Biol*. 2024;300:69-123.
13. Havrilesky LJ, Moorman PG, Lowery WJ, et al. Oral contraceptive pills as primary prevention for ovarian cancer: a systematic review and meta-analysis. *Obstet Gynecol*. 2013;122(1):139-147.
14. Rickard BP, Conrad C, Sorrin AJ, et al. Malignant Ascites in Ovarian Cancer: Cellular, Acellular, and Biophysical Determinants of Molecular Characteristics and Therapy Response. *Cancers (Basel).* 2021;13(17):4318.
15. Cancer Research UK. *Symptoms of ovarian cancer.* November 25, 2024. https://www.cancerresearchuk.org/about-cancer/ovarian-cancer/symptoms.
16. Demarco, C., *'My first symptoms of ovarian cancer': Signs to look for and when to see a doctor.* November 02, 2022. https://www.mdanderson.org/cancerwise/my-first-symptoms-of-ovarian-cancer---signs-to-look-for-and-when-to-see-a-doctor.h00-159544479.html
17. RUSH University System for Health. *5 Early Signs of Ovarian Cancer.* https://www.rush.edu/news/5-early-signs-ovarian-cancer.
18. Berek JS, Renz M, Kehoe S, Kumar L, Friedlander M. Cancer of the ovary, fallopian tube, and peritoneum: 2021 update. *Int J Gynaecol Obstet*. 2021;155 Suppl 1(Suppl 1):61-85.
19. González-Martín A, Harter P, Leary A, et al. Newly diagnosed and relapsed epithelial ovarian cancer: ESMO Clinical Practice Guideline for diagnosis, treatment and follow-up. *Ann Oncol.* 2023;34(10):833-848.

# References

20. Chien J, Poole EM. Ovarian Cancer Prevention, Screening, and Early Detection: Report From the 11th Biennial Ovarian Cancer Research Symposium. *Int J Gynecol Cancer.* 2017;27(9S Suppl 5):S20-S22.
21. NIH National Cancer Institute. *BRCA Gene Changes: Cancer Risk and Genetic Testing*. July 19, 2024. https://www.cancer.gov/about-cancer/causes-prevention/genetics/brca-fact-sheet.
22. Neff RT, Senter L, Salani R. BRCA mutation in ovarian cancer: testing, implications and treatment considerations. *Ther Adv Med Oncol*. 2017;9(8):519-531.
23. Weill Cornell Medicine. *Ovarian Cancer*. https://weillcornell.org/services/obstetrics-and-gynecology/gynecologic-oncology/conditions-we-treat/ovarian-cancer
24. Cancer Research UK. *Survival for ovarian cancer*. November 28, 2024. https://www.cancerresearchuk.org/about-cancer/ovarian-cancer/survival#:~:text=Stage%201,more%20after%20they%20are%20diagnosed.
25. National Health Service. Treatment for Ovarian Cancer. January 24, 2022. https://www.nhs.uk/conditions/ovarian-cancer/treatment/
26. Cleveland Clinic. *Ovarian Cancer: Symptoms, Diagnosis & Treatment*. https://my.clevelandclinic.org/health/diseases/4447-ovarian-cancer.
27. Cancer Research UK. Types of surgery. February 18, 2025. https://www.cancerresearchuk.org/about-cancer/ovarian-cancer/treatment/surgery/types-surgery.
28. Royal College of Obstetricians & Gynaecologists. *Curriculum Guide for Gynaecological Oncology (GO) Subspecialty Training (SST)*. https://www.rcog.org.uk/media/ojpfrrva/go-sst-curriculum-guide-vfinal-2.pdf
29. European Society of Gynaecological Oncology. *ESGO Accreditation in Advanced Ovarian Cancer Surgery*. https://www.esgo.org/ovarian-cancer-surgery-accreditation/.
30. Royal College of Obstetricians & Gynaecologists. *RCOG Workforce report 2022*. https://www.rcog.org.uk/media/wuobyggr/rcog-workforce-report-2022.pdf
31. Eskander RN, Moore KN, Monk BJ, Herzog TJ, Annunziata CM, O'Malley DM, Coleman RL. Overcoming the challenges of drug development in platinum-resistant ovarian cancer. *Front. Oncol*. 13:1258228.
32. Nikolaidi A, Fountzilas E, Fostira F, Psyrri A, Gogas H, Papadimitriou C. Neoadjuvant treatment in ovarian cancer: New perspectives, new challenges. *Front Oncol*. 2022;12:820128.
33. Rottenberg S, Disler C, Perego P. The rediscovery of platinum-based cancer therapy. *Nat Rev Cancer*. 2021;21(1):37-50.
34. Cancer Research UK. *Having radiotherapy for ovarian cancer.* https://www.cancerresearchuk.org/about-cancer/ovarian-cancer/treatment/having-radiotherapy.
35. Ovarian Cancer Action. *Hormone Treatment for Ovarian Cancer.* https://ovarian.org.uk/ovarian-cancer/living-with-ovarian-cancer/ovarian-cancer-treatment/hormone-treatment/.
36. Abdul-Aziz S, Bhattarai N, Vale L, Sagoo GS, Mukhopadhyay A. Challenges and opportunities to address the emerging burden of targeted therapies in ovarian cancer. *Gynecol Oncol Rep*. 2025;57:101680.
37. Reid, F. & Bajwa, A. The World Ovarian Cancer Coalition ATLAS 2023. 2023.
38. Ledermann JA, Matias-Guiu X, Amant F, et al. ESGO-ESMO-ESP consensus conference recommendations on ovarian cancer: pathology and molecular biology and early, advanced and recurrent disease. *Ann Oncol*. 2024;35(3):248-266. 4.
39. Fotopoulou C, Hall M, Cruickshank D, et al. British Gynaecological Cancer Society (BGCS) epithelial ovarian/fallopian tube/primary peritoneal cancer guidelines: recommendations for practice. *Eur J Obstet Gynecol Reprod Biol*. 2017;213:123-139.

# References

40. National Cancer Institute. *Ovarian Epithelia, Fallopian Tube, and Primary Peritoneal Cancer Treatment (PDQ®) – Health Professional Version*. https://www.cancer.gov/types/ovarian/hp/ovarian-epithelial-treatment-pdq#_40
41. Liberto JM, Chen SY, Shih IM, Wang TH, Wang TL, Pisanic TR 2nd. Current and Emerging Methods for Ovarian Cancer Screening and Diagnostics: A Comprehensive Review. *Cancers (Basel).* 2022;14(12):2885.
42. Ovarian Cancer Action. *Ovarian Cancer Statistics.* March, 2024.https://ovarian.org.uk/ovarian-cancer/ovarian-cancer-statistics/
43. Cancer Research UK. *Screening for ovarian cancer.* https://www.cancerresearchuk.org/about-cancer/ovarian-cancer/getting-diagnosed/screening
44. Mathieu KB, Bedi DG, Thrower SL, Qayyum A, Bast RC Jr. Screening for ovarian cancer: imaging challenges and opportunities for improvement. *Ultrasound Obstet Gynecol*. 2018;51:293-303.
45. Bast RC Jr, Lu Z, Han CY, et al. Biomarkers and Strategies for Early Detection of Ovarian Cancer. *Cancer Epidemiol Biomarkers Prev*. 2020;29(12): 2504-2512.
46. Richardson DL, Eskander RN, O'Malley DM. Advances in Ovarian Cancer Care and Unmet Treatment Needs for Patients With Platinum Resistance: A Narrative Review. *JAMA Oncol*. 2023;9(6):851–859.
47. Lin H, Wu CH, Fu HC, Ou YC. Evolving treatment paradigms for platinum-resistant ovarian cancer: An update narrative review. *TJOG*. 2024;63(4):471-478.
48. Target Ovarian Cancer. *Treatment when ovarian cancer has returned.* https://targetovariancancer.org.uk/about-ovarian-cancer/your-situation/my-ovarian-cancer-has-come-back/treatment#:~:text=The%20main%20group%20of%20drugs,the%20cancer%20cell%20will%20die.
49. Havasi A, Cainap SS, Havasi AT, Cainap C. Ovarian Cancer-Insights into Platinum Resistance and Overcoming It. *Medicina (Kaunas)*. 2023;59(3):544.
50. Li J, Zou G, Wang W, Yin C, Yan H, Liu S. Treatment options for recurrent platinum-resistant ovarian cancer: A systematic review and Bayesian network meta-analysis based on RCTs. *Front Oncol.* 2023;13:1114484.
51. St Laurent, Liu. Treatment Approaches for Platinum-Resistant Ovarian Cancer. *JCO*. 2024;42(2):127-133.
52. Summey R, Uyar D. Ovarian cancer resistance to PARPi and platinum-containing chemotherapy. *Cancer Drug Resist*. 2022;5(3):637-646.
53. Shahzad M, Naci H, Esselen KM, Dottino JA, Wagner AK. Regulatory histories of recently withdrawn ovarian cancer treatment indications of 3 PARP inhibitors in the US and Europe: lessons for the accelerated approval pathway. *J Pharm Policy Pract*. 2024;17(1):2351003.
54. Tavares V, Marques IS, Melo IG, Assis J, Pereira D, Medeiros R. Paradigm Shift: A Comprehensive Review of Ovarian Cancer Management in an Era of Advancements. *Int J Mol Sci*. 2024;25(3):1845.
55. Moore KN, Angelergues A, Konecny GE, et al. Mirvetuximab Soravtansine in FRα-Positive, Platinum-Resistant Ovarian Cancer. *N Engl J Med*. 2023;389(23):2162-2174.
56. Martorana F, Pavone G, Sessa C, Treglia G, Lheureux S, Colombo I. Can we learn from failures? A systematic review of phase III trials in platinum-resistant ovarian cancer. *IJGC*. 2025;35(1):100009.
57. AstraZeneca. *Lynparza™ approved by the US Food and Drug Administration for the treatment of advanced ovarian cancer in patients with germline BRCA mutations.* December 19, 2014. https://www.astrazeneca.com/media-centre/press-releases/2014/lynparza-approved-us-fda-brca-mutated-ovarian-cancer-treatment-19122014.html#

# References

58. U.S. Food and Drug Administration. *FDA approves olaparib tablets for maintenance treatment in ovarian cancer.* August 17, 2017.
https://www.fda.gov/drugs/resources-information-approved-drugs/fda-approves-olaparib-tablets-maintenance-treatment-ovarian-cancer
59. GlaxoSmithKline. *FDA approves Zejula (niraparib) as the only once-daily PARP inhibitor in first-line monotherapy maintenance treatment for women with platinum-responsive advanced ovarian cancer regardless of biomarker status.* April 29, 2020.
https://www.gsk.com/en-gb/media/press-releases/fda-approves-parp-inhibitor-in-first-line-monotherapy-maintenance-treatment-for-women-with-platinum-responsive-advanced-ovarian-cancer-regardless-of-biomarker-status/
60. U.S. Food and Drug Administration. *FDA approves niraparib for first-line maintenance of advanced ovarian cancer.* April 29, 2020.
https://www.fda.gov/drugs/resources-information-approved-drugs/fda-approves-niraparib-first-line-maintenance-advanced-ovarian-cancer
61. Arora S, Balasubramaniam S, Zhang H, et al. FDA Approval Summary: Olaparib Monotherapy or in Combination with Bevacizumab for the Maintenance Treatment of Patients with Advanced Ovarian Cancer. *Oncologist*. 2021;26(1):e164-e172.
62. Reuters. *GSK's cancer drug combo meets main goal in ovarian cancer trial.* December 20, 2024.
https://www.reuters.com/business/healthcare-pharmaceuticals/gsks-cancer-drugs-meet-progression-free-survival-goal-late-stage-trial-2024-12-20/#:~:text=Dec%2020%20(Reuters)%20%2D%20GSK,trial%2C%20meeting%20its%20main%20goal.
63. U.S. Food and Drug Administration. *FDA approves mirvetuximab soravtansine-gynx for FRα positive, platinum-resistant epithelial ovarian, fallopian tube, or primary peritoneal cancer.* March 22, 2024.
https://www.fda.gov/drugs/resources-information-approved-drugs/fda-approves-mirvetuximab-soravtansine-gynx-fra-positive-platinum-resistant-epithelial-ovarian
64. Verastem Oncology. *Verastem Oncology Announces FDA Acceptance and Priority Review of New Drug Application for Avutometinib in Combination with Defactinib for the Treatment of Recurrent KRAS Mutant Low-Grade Serous Ovarian Cancer.* December 30, 2024.
https://investor.verastem.com/news-releases/news-release-details/verastem-oncology-announces-fda-acceptance-and-priority-review
65. Allarity Therapeutics. *Allarity Therapeutics Announces Expansion of Phase 2 Clinical Trial to Accelerate Development of Stenoparib in Advanced Ovarian Cancer.* February 6, 2025.
https://allarity.com/press-release/allarity-therapeutics-announces-expansion-of-phase-2-clinical-trial-to-accelerate-development-of-stenoparib-in-advanced-ovarian-cancer/
66. Allarity Therapeutics. *Allarity Therapeutics Reports Key Progress in Phase 2 Stenoparib Trial and Strategic Corporate Advancements.* November 18, 2024.
https://allarity.com/press-release/allarity-therapeutics-reports-key-progress-in-phase-2-stenoparib-trial-and-strategic-corporate-advancements/
67. Genmab. *Genmab Completes Acquisition of ProfoundBio.* May 21, 2024.
https://ir.genmab.com/news-releases/news-release-details/genmab-completes-acquisition-profoundbio
68. Merck. *REJOICE-Ovarian01 Phase 2/3 Trial of Raludotatug Deruxtecan Initiated in Patients With Platinum-Resistant Ovarian Cancer.* April 3, 2024.
https://www.merck.com/news/rejoice-ovarian01-phase-2-3-trial-of-raludotatug-deruxtecan-initiated-in-patients-with-platinum-resistant-ovarian-cancer/

# References

69. Bodurtha Smith AJ, Pena D, Ko E. Insurance-Mediated Disparities in Gynecologic Oncology Care. *Obstet Gynecol*. 2022;139(2):305-312.
70. Bercow AS, Chen L, Chatterjee S, et al. Cost of Care for the Initial Management of Ovarian Cancer. *Obstet Gynecol.* 2017;130(6):1269-1275.
71. de Oliveira C, Pataky R, Bremner KE, et al. Phase-specific and lifetime costs of cancer care in Ontario, Canada. *BMC Cancer*. 2016;16(1):809.
72. Zafar SY, Abernethy AP. Financial toxicity, Part I: a new name for a growing problem. *Oncology (Williston Park).* 2013;27(2):80-149.
73. Prager GW, Braga S, Bystricky B, et al. Global cancer control: responding to the growing burden, rising costs and inequalities in access. *ESMO Open*. 2018;3(2):e000285.
74. Kantarjian HM, Fojo T, Mathisen M, Zwelling LA. Cancer drugs in the United States: Justum Pretium--the just price [published correction appears in *J Clin Oncol.* 2015 Oct 20;33(30):3523. doi: 10.1200/JCO.2015.64.8527.]. *J Clin Oncol.* 2013;31(28):3600-3604.
75. Sullivan R, Peppercorn J, Sikora K, et al. Delivering affordable cancer care in high-income countries. *Lancet Oncol*. 2011;12(10):933-980.
76. Knaul FM, Arreola-Ornelas H, Méndez-Carniado O, et al. Financial Catastrophe Due to Cancer in Latin America and the Caribbean: A Call for Action. *Lancet Oncol*. 2016;17(7):e492-e500.
77. de Souza JA, Hunt B, Asirwa FC, Adebamowo C, Lopes G. Global Health Equity: Cancer Care Outcome Disparities in High-, Middle-, and Low-Income Countries. *J Clin Oncol*. 2016;34(1):6-13.
78. Zafar SY, Peppercorn JM, Schrag D, et al. The financial toxicity of cancer treatment: a pilot study assessing out-of-pocket expenses and the insured cancer patient's experience. *Oncologist*. 2013;18(4):381-390.
79. Di Marcantonio, M., Beccia, F., Maio, A., et al. Personalized medicine in China: An overview of policies, programs, and actions in China. *WMHP*. 2024: 16, 558–576.
80. University of York. *Costs of expensive new drugs threaten financial sustainability of NHS*. June 5, 2023. https://www.york.ac.uk/news-and-events/news/2023/research/costs-new-drugs-financial-sustainability-nhs/
81. Data Bridge Market Research. *Global Ovarian Cancer Market – Industry Trends and Forecast to 2029*. August, 2022.
82. Grand View Research. *Global Ovarian Cancer Market Forecast 2024-2030*. 2024.
83. Allied Market Research. *Ovarian Cancer Drugs Market Report 2024*. 2024.
84. Allied Market Research. *Online Pharmacies Growth Analysis in Cancer Market*. 2024.
85. Global Market Insights Research. *Ovarian Cancer Treatment Market Forecast 2024-2032*. 2023
86. BioSpace News. *Ovarian Cancer Drugs Market Size to Hit USD 7.34 Billion by 2034*. February 12, 2025.
87. Straits Research. *Global Ovarian Cancer Market Size, Top Share, Growth and Report to 2032*. July, 2024.
88. Grand View Research. *Advances in Targeted Therapeutics for Ovarian Cancer.* 2023.
89. Straits Research. *Epidemiological Trends in Ovarian Cancer.* 2024.
90. BusinessWire. *Impact of Early Detection on Ovarian Cancer Outcomes*. 2024.
91. BusinessWire. *Regulatory & Reimbursement Trends in Oncology.* 2024.
92. Straits Research. *Competitive Landscape in the Ovarian Cancer Market*. 2024.
93. Straits Research. *Global Shortage of Oncology Specialists*. 2024.
94. BusinessWire. *Cost Challenges in Ovarian Cancer Treatment*. 2024.
95. IQVIA. *Global Oncology Trends 2024: Innovation, Access, and Policy Changes*. 2024.
96. World Health Organization. *Cancer Fact Sheet*. February 3, 2025. https://www.who.int/news-room/fact-sheets/detail/cancer