

HIPEC Guide

A guide for patients and families

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This guide is written for you and for the people beside you. No prior knowledge is needed. Read it at your own pace and take it to your appointment with your questions noted down.

What Is HIPEC?

Breaking Down the Name

HIPEC stands for *Hyperthermic Intraperitoneal Chemotherapy*. The name contains three concepts that together define the treatment:

- **Hyperthermic** — the chemotherapy solution is heated to 41–43°C (above normal body temperature of 37°C)
- **Intraperitoneal** — the drug is delivered directly inside the peritoneal cavity (the space inside your abdomen)
- **Chemotherapy** — it is a cancer-killing medication

In simple terms, HIPEC involves bathing the inside of the abdomen with heated anti-cancer medication during surgery, immediately after removing all visible cancer deposits from the peritoneal surface.

Why Heat?

The addition of heat is not incidental — it is fundamental to why HIPEC works. Heat enhances the anti-tumour effect of chemotherapy in several ways:

- It increases the penetration of the drug into peritoneal tissue
- It impairs the ability of cancer cells to repair DNA damage caused by the chemotherapy
- It directly damages cancer cells, which are more sensitive to heat than normal cells
- It opens up the small blood vessels in the peritoneum, improving drug delivery

Temperatures of 41–43°C are sufficient to achieve these effects without causing significant damage to healthy tissue. The abdominal organs are monitored throughout the procedure with multiple temperature probes to ensure safe and effective heating.

Why Directly Inside the Abdomen?

When chemotherapy is given intravenously (through a drip), it travels through the entire bloodstream and reaches the peritoneal surface only in small concentrations — partly because the peritoneal-plasma barrier limits drug penetration. By delivering the drug directly into the peritoneal cavity, concentrations 20 to 1,000 times higher can be achieved at the tumour site compared with intravenous administration, while keeping systemic blood levels — and therefore systemic side effects — much lower.

CLINICAL PEARL

HIPEC is not standard intravenous chemotherapy given inside the abdomen. The drug concentration achieved at the peritoneal surface is orders of magnitude higher than anything achievable systemically. This is what makes it potentially effective against microscopic disease remaining after cytoreductive surgery.

Who Is HIPEC For?

The Tumour Types That May Benefit

HIPEC is not appropriate for all cancers. It is used specifically for cancers that have spread to the peritoneum (peritoneal carcinomatosis) and where complete surgical removal of all visible disease (cytoreductive surgery, CRS) can be achieved. The tumour types with the strongest evidence for CRS+HIPEC include:

Tumour Type	Evidence Level	Expected Benefit
Appendiceal mucinous neoplasms (low grade)	Strong (retrospective series)	5-year survival > 80% with CC-0 resection
Pseudomyxoma peritonei	Strong	10-year survival > 60% in low-grade disease
Colorectal peritoneal metastases (PCI ≤ 20)	Moderate (PRODIGE 7, Verwaal)	Median OS 41 months vs 17 months (historical controls)
Ovarian cancer (interval/primary)	Strong (OVHIPEC-1)	Median OS 45.7m vs 33.9m (OVHIPEC-1, NEJM 2018)
Mesothelioma (peritoneal)	Moderate	Median OS 53 months in selected patients
Gastric cancer (synchronous PM)	Emerging (FLOT trials)	Selected patients; ongoing RCTs

The Selection Criteria

Not every patient with peritoneal carcinomatosis is a candidate for CRS+HIPEC. Your surgical team will evaluate several factors:

- **PCI (Peritoneal Cancer Index):** Generally, $PCI \leq 20$ for colorectal origin; higher PCI may be acceptable for appendiceal/pseudomyxoma
- **Performance status:** You must be fit enough to tolerate a 6–10 hour operation and a prolonged recovery. ECOG performance status 0–1 is generally required
- **Absence of distant metastases:** Liver metastases, lung metastases, or bone metastases at the time of evaluation usually exclude HIPEC

- **Nutritional status:** Poor nutrition significantly increases operative risk and may need to be corrected before surgery
- **Tumour biology:** High-grade histology (e.g. signet ring cell colorectal cancer) is associated with poor outcomes and may be a contraindication

KEY POINT

The OVHIPEC-1 trial (van Driel, NEJM 2018) was the first randomised controlled trial to show a survival benefit for HIPEC in ovarian cancer: adding HIPEC to interval cytoreductive surgery improved median overall survival from 33.9 to 45.7 months without increasing side effects. This landmark result changed practice for ovarian cancer in many European centres.

What to Expect: Before, During, and After

Before the Operation

The preparation for CRS+HIPEC involves several steps over the weeks before your surgery date. Your team will perform a full assessment of your general fitness including cardiac and lung function tests, blood tests, and nutritional assessment. You may be referred to a dietitian if your nutritional state needs improving before surgery.

You will meet your anaesthetist before the operation. A good relationship with your anaesthetic team is important — do not hesitate to ask questions about pain control, nausea, and what the immediate recovery period will feel like.

Fasting: You will be asked not to eat solid food from midnight before surgery, and most centres allow a carbohydrate-rich clear fluid drink up to 2 hours before anaesthesia (this is part of the ERAS protocol and helps reduce post-operative nausea and insulin resistance).

During the Operation

You will be under general anaesthesia — completely asleep and feeling nothing — for the entire duration of the operation. The first part of the procedure is cytoreductive surgery (CRS), during which the surgeon carefully removes all visible peritoneal deposits. Depending on the extent of

the disease, this may include resections of bowel, omentum, spleen, or portions of the peritoneum from the abdominal wall or diaphragm.

Once CRS is complete and haemostasis (bleeding control) is achieved, the HIPEC circuit is connected. Tubes are placed through the abdomen, and the heated chemotherapy solution is circulated inside the abdominal cavity for 60–90 minutes. A specialised perfusionist manages the HIPEC circuit, monitoring drug temperature and flow throughout. Your temperature, blood pressure, and other vital signs are monitored continuously by the anaesthetic team.

After HIPEC is complete, the abdomen is washed out with warm saline, the circuit tubes are removed, any bowel anastomoses are fashioned, and the abdomen is closed. The entire procedure typically takes 6 to 10 hours.

Immediately After: The ICU or HDU

You will wake up in the ICU or High Dependency Unit. This is standard for all CRS+HIPEC patients — it is not a sign that anything has gone wrong. The first 24–48 hours involve close monitoring of your:

- Heart rate and blood pressure
- Urine output (via a urinary catheter)
- Breathing (possibly with supplemental oxygen or non-invasive ventilation)
- Blood tests (checking kidneys, liver, blood count, and electrolytes)
- Temperature (hypothermia and fever are both monitored)

Pain will be managed with an epidural catheter (placed before surgery) or a patient-controlled analgesia (PCA) pump — a device that allows you to self-administer small doses of pain medication by pressing a button. You are in control.

Side Effects of HIPEC

Because HIPEC delivers chemotherapy directly to the peritoneal surface rather than into the bloodstream, many of the side effects associated with conventional intravenous chemotherapy are significantly reduced. However, some effects are still possible:

- **Bone marrow suppression (low blood counts):** Can occur with certain agents; monitored by regular blood tests
- **Kidney function changes:** The kidneys are monitored closely during and after surgery, particularly with cisplatin-based HIPEC
- **Nausea:** Usually manageable with antiemetic medications
- **Temporary gut ileus:** A period of reduced bowel activity is normal after any abdominal surgery and usually resolves within 3–5 days

Hair loss and severe systemic toxicity — the most feared side effects of conventional chemotherapy — are not typically caused by HIPEC at standard doses.

⚠ WHEN TO CONTACT YOUR TEAM AFTER DISCHARGE

- Fever above 38°C
- Progressive abdominal pain or swelling
- Wound issues: redness, warmth, discharge, or opening
- Inability to eat or keep fluids down
- No bowel movements for more than 5 days
- Shortness of breath or chest pain
- Swollen or painful leg

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