Patient Guide to Colon Cancer Surgery and Treatment

An educational guide prepared by Genomic Health, Inc.
This is your booklet

It is designed to help you through this challenging time. Use it as a guide during discussions about your treatment with your surgeon and other colon cancer experts on your healthcare team.

Draw on it. Write on it. Make it your own.

This booklet provides basic information on the diagnosis and treatment of colon cancer. Learn all you can. Ask questions. Use the form at the back to record your treatment plan, and keep it for future reference and meetings with your healthcare team.
With your diagnosis of colon cancer, and throughout your treatment, it is normal for you to feel anxious and concerned. At the same time, it is important to remember that you are not alone. There have been numerous recent improvements in both the diagnosis and treatment of colon cancer. You have at your disposal the skills, knowledge, and experience of dedicated healthcare experts who can help guide your decisions through this challenging time.

**Where to begin**
Start by learning all you can about colon cancer. The more you know, the more your healthcare team can help.

Find the best care. Having confidence in your healthcare team will allow you to feel comfortable asking questions and talking to them about any fears or concerns you may have.

Take charge. You have a life to live. Talk to your doctor. Understand your diagnosis and treatment plan. Keep track of how you’re feeling. Ask for what you need. And stay actively involved in all treatment decisions.
Your Healthcare Team

Treatment of colon cancer is complex and requires a team of specialists with expertise in several areas. The most important member of the team is you. The job of the rest of your team is to make sure that you are informed and that your surgery and treatment are a success. Here are the medical experts who might be part of your healthcare team:

**Primary care doctor**
Attends to your general healthcare needs before, during, and after your cancer surgery and treatment

**Gastroenterologist**
Performs colonoscopies, assesses and removes polyps, and provides diagnostic information

**Colorectal or general surgeon**
Removes section of colon and surrounding lymph nodes

**Surgical oncologist**
Specializes in the surgical treatment of the organs affected by cancer

**Pathologist**
Analyzes the tumor tissue to characterize the type of your colon cancer

**Medical oncologist**
Treats cancer using chemotherapy, targeted therapy, and other drugs

**Radiation oncologist**
Designs and administers radiation therapy

**Oncology nurse or nurse practitioner**
Manages your care and comfort before, during, and after treatment

**Nurse navigator**
Acts as an educator and patient advocate, who coordinates treatment and follow-up

**Dietitian**
Helps plan and manage dietary changes due to a changed intestinal tract

**Social worker**
Helps with your psychological, family, and financial concerns before and after treatment
Colon Anatomy

Learning about colon anatomy can help you better understand your treatment options.
Anatomy of the Colon

Use these illustrations for your notes and drawings.
Anatomy of the Colon

The colon, along with the esophagus, stomach, and small intestine, is part of the digestive system. Also referred to as the large intestine or large bowel, the colon absorbs water from digested food and moves waste out of the body. Beneficial bacteria living inside the colon produce vitamins and help prevent growth of harmful bacteria.

The **cecum** is connected to the ileum and is the first part of the colon. The **rectum** is the last section of the colon.

The **ascending colon** travels up the right side of the body from the cecum. The **anus** is an opening at the end of the digestive tract through which waste is expelled from the body.

The **transverse colon** runs across the abdomen, just below the stomach. **Blood vessels** supply oxygen and nutrients to tissues of the colon.

The **descending colon** runs down the left side of the body. **Lymph nodes** are part of the lymphatic system. The lymphatic system drains and filters fluids from cells and is an important part of the immune system.

The **sigmoid colon** is a short, S-shaped section of the colon just before the rectum.
About Colon Cancer

The more you know about colon cancer, the better you can understand your treatment options and the choices available to you.
What is Colon Cancer?

Colon cancer develops over a number of years and usually begins with the growth of a polyp. A polyp is a benign tumor. However, some types of polyps can become malignant tumors and grow into the wall of the colon and spread further into tissues of the colon, blood vessels, and nearby lymph nodes.

There are different types of colon cancer. Most are a type called adenocarcinoma. Others such as carcinoid tumors and gastrointestinal stromal tumors (GISTs) are less common.

What causes colon cancer?

There are several known risk factors associated with colon cancer and every person is unique. However, like all cancers, colon cancer tumors result from changes in DNA (deoxyribonucleic acid) within the cells. These changes, or mutations, can be inherited or acquired during a person’s lifetime.

For most patients with colon cancer, acquired mutations that occur in colon cells result in malignant tumors. A very small percentage of patients have an inherited susceptibility to colon cancer.
How Colon Cancer is Diagnosed

A medical consultation for colon cancer includes collecting information such as symptoms, a physical exam, review of medical and family history, and a series of diagnostic tests. For a definite diagnosis of colon cancer, a biopsy is required.

**Symptoms**
Symptoms of colon cancer include signs such as:
- Blood in the stool
- Increased stomach discomfort
- Changes in bowel habits
- Unexplained weight loss
- Constant or unexplained fatigue and weakness

**Diagnostic tests**
There are a number of diagnostic tests that doctors use to help detect if a person has colon cancer:
- **Colonoscopy** – a method that allows the doctor to view the entire colon to see whether polyps or suspicious growths are present
- **Sigmoidoscopy** – a method used to view the sigmoid section of the colon to see whether polyps or suspicious growths are present
- **Imaging** – such as CT scan (computed tomography), chest X-ray, MRI (magnetic resonance imaging), and PET scan (positron emission tomography) provide accurate details of the colon and other organs
- **Blood testing** – tests for certain markers in the blood, for example:
  - CEA (carcinoembryonic antigen) indicates the presence of colon cancer
  - CBC (complete blood count) rules out anemia due to blood loss from a bleeding tumor
  - Metabolic panel assesses organ (such as liver or kidney) function
The Biopsy

During a colonoscopy or surgical procedure, tissue samples are collected and sent to a pathologist for review. The pathologist examines the biopsy samples under a microscope and may also perform genetic testing on them.

A biopsy is performed on all polyps removed during a colonoscopy as well as on tissue removed during a surgical procedure. A biopsy is required for a cancer diagnosis and essential for colon cancer staging.
Characterizing Your Cancer

Characterizing your unique tumor biology for developing your treatment plan.
The Pathology Report

The pathology report provides important information about your colon cancer. This information is obtained from tests performed on the biopsy sample or surgical sample taken from your tumor. It is important to discuss the pathology report with your physician as soon as the results are available.

Information on your pathology report may include:

**Tumor cell type** – the kind of cells that form your tumor

**Tumor grade** – describes how different cells in a tumor appear compared to normal cells in the colon

**Tumor depth** – how far the tumor has grown or spread into surrounding tissues

**Mismatch repair (MMR) status** – whether there is a deficiency in MMR, the system responsible for correcting errors in DNA replication. This deficiency, called MMR-D, is associated with some colon cancers

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**Recurrence risk and MMR status**

Knowing your MMR status may help you and your doctor in making treatment decisions. Studies have shown that stage II colon cancer patients with MMR-deficient (MMR-D) tumors have a lower risk of recurrence compared to patients with MMR-proficient (MMR-P) tumors. Guidelines from the National Comprehensive Cancer Network (NCCN®)* suggest considering MMR testing for stage II patients to assess recurrence risk and benefit of chemotherapy.

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**Surgical margins** – the amount of normal tissue surrounding the edge of the tumor tissue removed during surgery

- Negative margins – cancer was entirely removed during surgery
- Positive margins – residual cancer cells may remain following surgery

**Lymphovascular involvement** – whether the blood vessels and lymphatic drainage system have been invaded by cancer cells

**Lymph node status** – whether or not cancer is detected in lymph nodes removed during surgery
Colon Cancer Staging and Grading

The information on your pathology report—along with other factors, including your age, general health, and medical and family history—help you and your doctor make treatment decisions.

**Colon cancer staging**

Staging is a method of organizing information about your colon cancer that helps your doctor to describe your tumor and how far it has spread. It gives physicians a common language and is useful for deciding on treatment options following surgery. Staging is usually done after the tumor is removed and the lymph nodes have been examined. The stage of a cancer is one of the most important factors in determining prognosis and treatment options.

**Colon cancer grading**

“Grade” is a term used to describe how closely the cells in your tumor resemble normal tissue cells under a microscope. The higher the grade, the more the cells differ from normal. For example, low-grade tumor cells look like normal cells, while high-grade tumor cells look different from normal cells. In general, low-grade cancers tend to grow and spread more slowly than high-grade cancers.

**The TNM system**

A staging system is a standardized way in which the cancer care team describes the extent of the cancer. The most commonly used staging system for colorectal cancer is the TNM system.

Staging is based on three criteria:

T (Tumor) – the tumor size, depth, and the location

N (Nodes) – whether any lymph nodes are involved

M (Metastasis) – whether the cancer has spread beyond the lymph nodes

Numbers or letters are added after T, N, and M to provide additional information. For example: TX means Primary tumor cannot be assessed; N1 means Metastasis in 1–3 lymph nodes; MO means No distant metastasis.
**Stage 0**  
*(in situ)* The tumor is small and limited to the inner wall of the colon

**Stage I**  
The tumor has spread to the second and third layer of the colon wall, but not to the outer wall

**Stage II**  
The tumor has spread to the outer wall of the colon, but not to lymph nodes or other tissue

**Stage III**  
The tumor has spread into nearby lymph nodes, but not to other parts of the body

**Stage IV**  
The tumor has spread to other organs such as the liver, lungs, and brain
Your Treatment Decision

After your colon cancer is staged, take the time you need to talk to your doctor, consider your treatment options, and develop your treatment plan.
Treatment Approaches

There are several conventional approaches to the treatment of colon cancer. Before making any treatment decisions, be sure to discuss your options—and their potential risks and benefits—with your physician.

**Surgery (colectomy)** – removes the cancerous part of the colon and reconnects the healthy parts (anastomosis)

**Chemotherapy** – drugs (injected or oral) that kill cancer cells, shrink tumors, and slow tumor growth

**Targeted therapy** – drugs (often monoclonal antibodies) that disrupt/stop cancer cell growth (anti-angiogenesis, anti-epidermal growth factor response); sometimes used in combination with standard chemotherapy in stage IV colon cancer or in clinical trials

**Radiation** – uses high-energy X-rays to destroy cancer cells; rarely used to treat colon cancer; more common in treatment of rectal cancer

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**Looking at the biology of your tumor**

The Oncotype DX® Colon Cancer Test can further guide treatment decisions. By looking at the biological features of a stage II or stage III tumor, the test estimates the risk that the tumor will return following surgical removal. This risk of recurrence is an important consideration in deciding whether a patient with stage II colon cancer should or should not get chemotherapy following surgery. For a patient with stage III colon cancer, the risk of recurrence can help determine which chemotherapy may be most appropriate.
Treatment by Stage

When developing a colon cancer treatment plan, it is important to consider the stage of your cancer. Depending on the stage, more than one treatment approach may be used.

Following are some examples. A specific plan for you should be discussed with your physician.

- **Stage 0:** Local surgery (removal of polyps or larger tumors)
- **Stage I:** Surgery followed by observation
- **Stage II:** Surgery followed by chemotherapy or observation
- **Stage III:** Surgery followed by chemotherapy
- **Stage IV:** Surgery, chemotherapy, radiation, targeted therapy
- **Recurrence:** Therapy for recurrence may include surgery, chemotherapy, and/or radiotherapy.
Oncoype DX®
Colon Cancer Test

A unique test for patients with stage II or stage III colon cancer
The **Oncotype DX® Colon Cancer Test**

The *Oncotype DX* Colon Cancer Test is a gene-based diagnostic test that provides additional information about your specific tumor—information not available through other tests. It can help determine the likelihood of cancer recurrence, the potential benefit of chemotherapy, and for stage III patients, which chemotherapy treatment might be most appropriate.

**Are You a Candidate for the Test?**

You may be a candidate for the *Oncotype DX* test if you have recently been diagnosed with stage II or stage III A/B colon cancer. Since the *Oncotype DX* test can help guide appropriate treatment decisions following surgery, the decision whether to order the test should be made by you and your doctor together.

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**When should *Oncotype DX* be used?**

- **Screening**
  - Colonoscopy
  - Sigmoidoscopy

- **Surgery**
  - Resection
  - Anastomosis

- **MMR and *Oncotype DX* Testing**

- **Diagnosis**
  - Biopsy
  - Imaging

- **Definitive Diagnosis**
  - Resection
  - Anastomosis
  - Other

- **Adjuvant Treatment Decision**
  - Chemotherapy
  - No treatment
How is the Test Performed?

The Oncotype DX test examines the activity of 12 genes from tissue removed during your initial surgery (“resection”). It then generates a “Recurrence Score® result” that provides information about the likelihood of your cancer returning.

As with any laboratory test, an authorized healthcare provider such as your surgeon or oncologist must order the Oncotype DX test. Results will be sent directly to the provider and usually arrive in 10 to 14 calendar days.

Does My Insurance Cover the Oncotype DX Test?

In most cases, your Oncotype DX test is a covered benefit. In any case, the Genomic Health® Genomic Access Program (GAP) negotiates directly with insurers or third-party payers to secure the best coverage possible and handles all the hassles of the reimbursement process. Most patients also qualify for our world-class Patient Assistance Plan for any patient responsibility not covered by insurance. For information on reimbursement for the Oncotype DX Colon Cancer Test, or for any other questions, call +1 (888) ONCOTYPE (888-662-6897).

More information about the Oncotype DX test is available at www.oncotypedx.com.
Oncotype DX® Colon Cancer Test: Patient Report

A detailed Oncotype DX Colon Cancer report is generated for each patient. It contains a Recurrence Score® result reported on a scale from 0–100:

- A lower score indicates a lower risk of the cancer returning
- A higher score indicates a higher risk of the cancer returning

Example from a Stage II Colon Cancer Report

**EXAMPLE Recurrence Score® Result 48**

**Stage II Recurrence Risk: Following Surgery Alone**

- **34%**
  - T4, MMR-P
  - (95% CI: 24%-46%)

- **20%**
  - T3, MMR-P*
  - (95% CI: 16%-26%)

*2% of all patients with T4, MMR-D tumors had estimated recurrence risks that approximated (with large confidence intervals) those for patients with T3 stage, MMR-P tumors and were not included in this figure.

**Stage II Recurrence Risk: Following Surgery and Adjuvant Chemotherapy**

- **17%**
  - 5FU/LV
  - (95% CI: 12%-24%)

- **13%**
  - 5FU/LV + oxaliplatin
  - (95% CI: 9%-19%)

1 In the clinical validation studies, very few patients had Recurrence Score results > 70.
Understanding Your Risk of Recurrence

Having a lower Recurrence Score result does not mean that there is no chance that your colon cancer will return. Likewise, having a higher Recurrence Score result does not mean that your colon cancer will definitely return. It is important to discuss your results with your physician. Together you can use the Recurrence Score result to make a more informed and individualized decision about treatment.

Example from a Stage III A/B Colon Cancer Report

**EXAMPLE Recurrence Score® Result** 10

Stage III A/B Recurrence Risk: Following Adjuvant Chemotherapy

16%  [5FU/LV](95% CI: 11%-22%)

12%  [5FU/LV + oxaliplatin](95% CI: 9%-17%)

5-Year Recurrence Risk by Recurrence Score Result and Treatment

*In the clinical validation studies, very few patients had Recurrence Score results > 70. Lower Recurrence Risk*
Resources

Help is close at hand through your healthcare team, support groups, and online resources.
Taking Care of Yourself

Be an active participant in your treatment. Work with your healthcare team. Learn, ask questions, maintain a positive outlook. Consider joining a colon cancer support group—it is a great way to get answers to questions, receive support and gain insight from others with your cancer.

Information Resources

Here are some suggested websites where you can start your search for information and support groups.
American Cancer Society  
www.cancer.org
The American Cancer Society (ACS) is a nationwide, community-based voluntary organization that provides detailed information for patients on colon cancer prevention, detection, treatment, staying healthy, research, and community activities.

CancerCare  
www.cancercare.org
CancerCare is a national nonprofit organization that provides free, professional support services and programs to people with cancer.

Cancer Support Community  
www.wellness-community.org
The Cancer Support Community is an international nonprofit organization that provides personalized services and education to people affected by cancer.

Colon Cancer Alliance  
www.ccalliance.org
The Colon Cancer Alliance is an organization committed to eliminating the suffering and death caused by colon cancer. Their website offers educational resources and support for patients, friends, and families, as well as personal stories and information on advocacy, research, and clinical trials.

Colon Cancer Answers  
www.coloncanceranswers.com
Colon Cancer Answers is a social media site dedicated to helping patients share their stories and learning more about their disease.

Fight Colorectal Cancer  
www.fightcolorectalcancer.org
Fight Colorectal Cancer’s mission is to win the fight against colorectal cancer through research, empowerment, and access. Their website contains information and resources for patients, advocacy and research news, a newsletter, and physician-written articles about colorectal cancer.

My Colon Cancer Coach  
www.mycoloncancercoach.org
My Colon Cancer Coach is the first patient-focused, interactive online tool where newly diagnosed colon cancer patients can learn more about their disease. The site includes a questionnaire that takes less than 10 minutes to complete and provides patients with information unique to their diagnosis, including personalized treatment options to discuss with their physician.

National Cancer Institute (NCI)  
www.cancer.gov
The National Cancer Institute is part of the U.S. National Institutes of Health (NIH). Their website provides comprehensive information on colon cancer, clinical trials, ongoing research, patient support, and resources.
List of Terms

USEFUL TERMS AND DEFINITIONS FOR COLON CANCER PATIENTS AND CAREGIVERS.
**List of Terms**

*Useful terms and definitions for colon cancer patients and caregivers*

**Adenocarcinoma:** Cancer that begins in cells that line certain internal organs that have glandular (secreting) properties. Most colon cancers are adenocarcinomas.

**Adjuvant Therapy:** Treatment performed after surgery.

**Anastomosis:** Surgically connecting two ends of the colon after colectomy (resection).

**Anemia:** A condition in which there is not enough hemoglobin or red blood cells in the blood.

**Angiogenesis:** The growth of new blood vessels, including those that feed a tumor.

**Anti-angiogenesis:** Blocking the growth of new blood vessels.

**Anti-EGFR (Anti-Epidermal Growth Factor Receptor):** An agent that blocks the activity of EGFR (see EGFR) to prevent cancer growth.

**Antibody:** A protein in the blood produced by immune cells to fight off diseases.

**Benign Tumor:** A tumor that is not cancerous and will not spread to surrounding tissues or to other parts of the body.

**Cancer:** A condition in which abnormal cells divide without control or fail to die as part of a normal cell’s life cycle. Cancer cells can also invade nearby tissues and can spread through the bloodstream and lymphatic system to other parts of the body.

**Carcinoid Tumors:** Tumors that start from hormone-producing cells.

**CAT (Computerized Axial Tomography) Scan:** A type of X-ray that uses a computer to produce a series of detailed pictures of areas inside the body. Also called a CT (computerized tomography) scan.

**CEA (Carcinoembryonic Antigen):** A protein marker in the blood that may be present with some cancers; may be used to monitor response to treatment or disease recurrence.

**Cell:** The smallest unit of tissues that make up any living thing. Cells have a very specialized structure and function.

**Colectomy:** Surgery to remove all or part of the colon (also called resection).

**Colonoscopy:** A test procedure in which a flexible, tubular instrument equipped with a video camera is used by a doctor to visually inspect the inner lining of the colon.
**Diagnosis:** Identification of a condition, such as colon cancer, by its signs and symptoms and the results of laboratory tests or other examinations.

**DNA (Deoxyribonucleic Acid):** A biological compound found in all living organisms that contains genetic instructions used by cells to develop and function.

**EGFR (Epidermal Growth Factor Receptor):** A protein on the surface of some tumor cells that may promote the growth and spread of the cancer.

**Gastrointestinal Stromal Tumors (GISTs):** Tumors that start from cells in the wall of the colon called the interstitial cells of Cajal; may be benign or malignant; not often found in the colon.

**Gene Expression:** The level of activity of a gene or group of genes.

**Gene:** A biological unit of inherited traits in living beings that is passed on from one generation to the next.

**Lymph Nodes:** Small, bean-shaped organs; part of the lymphatic system. During surgery, some lymph nodes may be removed to help determine the stage of the cancer.

**Malignant:** Cancerous.

**Metastasis:** The spread of cancer cells from where they started to other parts of the body.

**Monoclonal Antibody:** An antibody produced in the laboratory that can bind to specific cells; can be used for diagnosis or therapy; can also be used with other drugs or to deliver drugs or radioactive material to cells.

**MRI (Magnetic Resonance Imaging):** A method of imaging organs of the body using magnetic energy.

**Mutation:** A change in DNA sequence of a gene.

**PET (Positron Emission Tomography) Scan:** An imaging method that produces three-dimensional images of processes in the body.

**Polyp:** A growth from a mucous membrane commonly found in organs such as the colon.

**Recurrent:** The return to a previous condition. A recurrent cancer is one that reappears in the body after it was removed, either at the original site (local) or in other organs (distant).

**Resection:** The surgical removal of part or all of an organ or tissue (also called colectomy).

**X-ray:** A form of radiation that can be used at low levels to produce images of the body or at high levels to destroy cancer cells.
Your Treatment Profile

Use the form inside to summarize your treatment.
YOUR TREATMENT TIMELINE
ENTER DATES BELOW

Date of surgery: ____________________________
Date of Oncotype DX® test: ____________________________
Post-surgery recovery: ____________________________
Date of meeting with medical oncologist: ____________________________
Chemotherapy recommended: ☐ Yes ☐ No
If yes, type of chemotherapy: ____________________________

Notes:
__________________________________________
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__________________________________________
YOUR TREATMENT PROFILE

Use this illustration for your notes and drawings.

YOUR PATHOLOGY REPORT WILL PROVIDE THE FOLLOWING AFTER YOUR SURGERY:

Tumor type: ________________________________  Tumor stage: ______

MMR status (how aggressive is your tumor):
☐ MMR-Deficient  ☐ MMR-Proficient

Lymph node status: ☐ positive  ☐ negative : Number of positive lymph nodes to total lymph nodes sampled: ______

Bowel perforation or obstruction:  ☐ No  ☐ Yes

Lymphatic or vascular invasion:  ☐ No  ☐ Yes

Oncotype DX® Recurrence Score® result (between 0–100): ________________

Therapy:

Chemotherapy: __________________________________________

Targeted: ________________________________________________

Other: __________________________________________________