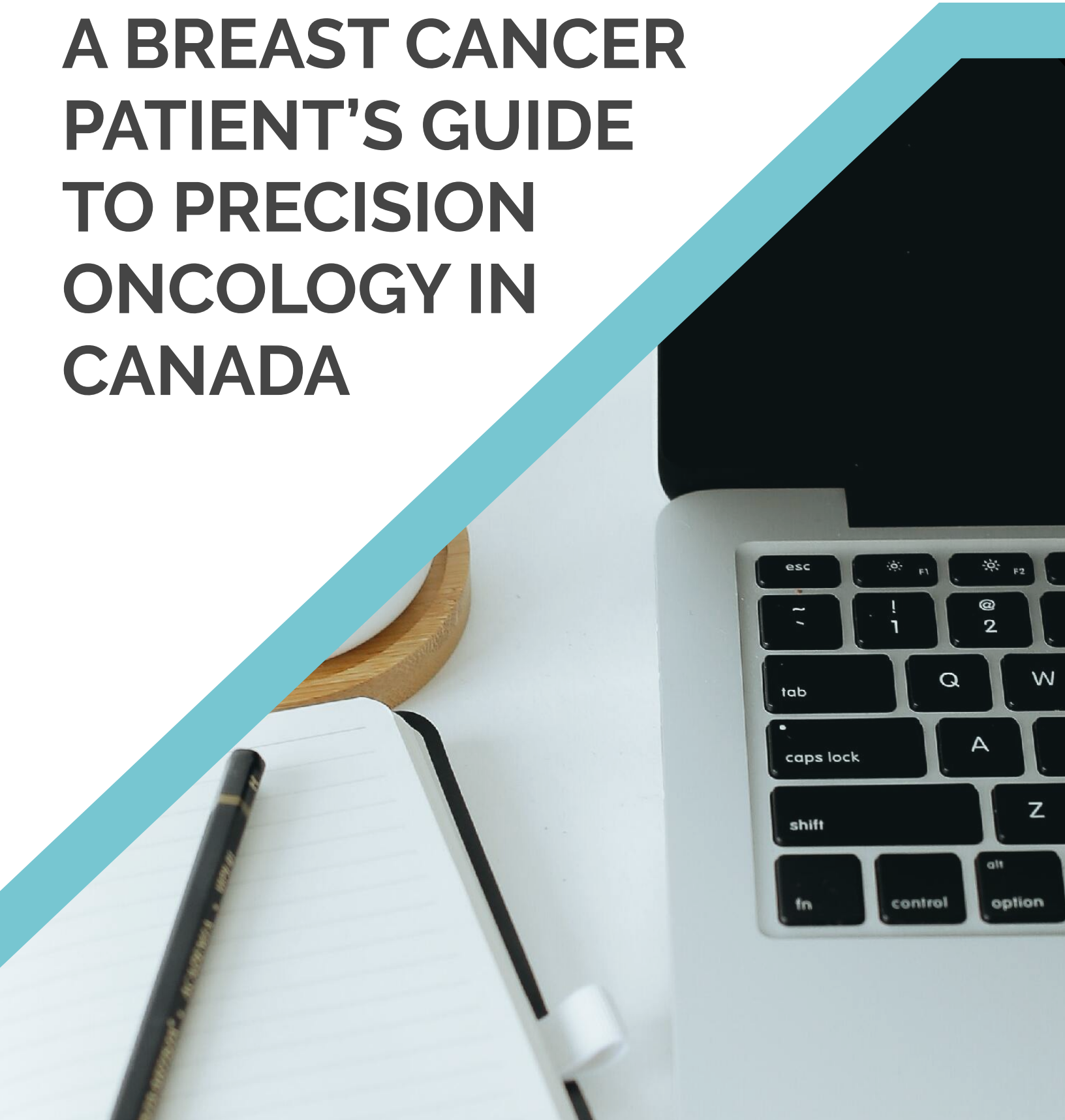




Canadian Breast Cancer Network
Réseau canadien du cancer du sein

A BREAST CANCER PATIENT'S GUIDE TO PRECISION ONCOLOGY IN CANADA



As researchers and doctors learn about cancer, they are realizing that there isn't one standard approach to treating it, but many factors to consider as they develop treatment plans for each patient. In the standard approach to treating cancer, treatment plans are mostly determined by location, type, and stage of the cancer. In **precision oncology**, treatment plans are personalized to the individual patient. Personalizing treatment to the patient is known as **precision medicine or personalized medicine**, while the use of precision or personalized medicine specifically within cancer research and for cancer patients is referred to as **precision oncology**.

With precision oncology being relatively new, we are providing this toolkit to guide **early- and late-stage breast cancer patients** through the types of precision oncology methods, how it can help people with breast cancer, and offer ways you may advocate for it. The information here is not exhaustive and is meant to offer a comprehensive summary of precision oncology in Canada. If you wish to learn more, you can access our additional resources on precision oncology listed at the end of the guide.

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How Precision Oncology Can Help People with Breast Cancer

There are currently 3 ways in which precision oncology helps breast cancer patients:

Identify breast cancer sub-types

Identifying a patient's breast cancer [sub-type](#) is one way to individualize treatment. The major sub-types are defined by proteins called [receptors](#) that attach to hormones like estrogen, progesterone, and human epidermal growth factor¹. These receptors stimulate the growth of cancer cells. Figuring out whether these receptors are present in breast cancer cells is essential to determine the sub-type (hormone receptor-positive, HER2-positive, or triple-negative) and the relevance of various tests and treatments.

Eliminates unnecessary therapies and treatments²

Oncologists can use [molecular tests](#) to help predict the chance of recurrence of breast cancer in patients. Having a better understanding of genetic activity in cancer cells will help your oncologist determine a treatment plan. While often working to avoid unnecessary treatments, these tests could address whether chemotherapy should be a component of your treatment plan.

Targeted treatment opportunities²

Features known as [biomarkers](#) are responsible for or critical to the behaviour of breast cancer. Precision oncology may be used to identify these biomarkers, giving us knowledge to identify opportunities to use targeted therapies, which may provide additional treatment options.

Types of Precision Oncology

There are currently two main types of personalized medicine methods within oncology: genomic testing and genetic testing.

Genomic Testing

Genomics is the study of [DNA](#). Unlike genetics², which looks at the function of a single gene, genomics looks at all genes and attempts to understand how their combined efforts influence the body or the behaviour of a given disease. This can be used in cancer patients to identify unique aspects specific to the patient and tumour that will help oncologists use treatments that are more precisely “matched” to the tumour. Additionally, this testing can identify “[biomarkers](#)” within a specific tumour that may help predict its behaviour (e.g., the likelihood of recurrence) or response to therapy. Biomarker testing is used in some instances to assess who may benefit from a specific anti-cancer treatment and who might be at an increased risk of side effects from other treatments.

What Does Genomic Testing Involve?

Genomic testing is performed on a sample of cancer cells through surgery or biopsy, or sometimes other bodily fluids³.

In some cases, a blood sample can be used to test features of the cancer that are shed into the bloodstream, known as a [liquid biopsy](#). The sample is then sent to a laboratory to test the cells, and a lab report is created based on the findings.

This type of testing continues to be an active area of research. [The Canadian Cancer Trials Group](#) is conducting several clinical trials with genomic testing. These research studies will help define the potential role of genomic tests in different breast cancer settings. Participation in such trials may provide access to genomic testing or novel therapies for patients.

It is important to note that genomic tests are only useful at certain times for certain people with cancer and are not always necessary. Ordering the right test in the right clinical scenario is important for successful precision oncology.

Genetic Testing

In breast cancer patients, genetic testing is done to determine germline mutations. Germline mutations are hereditary and can increase the risk of developing breast cancer (or other cancers depending on the mutation). Taking a genetic test can identify if or which gene mutations you may have and thus help determine a more personalized path of treatment or determine your risk of occurrence.

Germline mutations are hereditary and can increase the risk of developing cancer.

Genetic testing guidelines and accessibility may vary between provinces, but general eligibility criteria may be based on the following risk factors⁴:

- Personal history of breast cancer at a young age (age eligible varies between provinces)
- Personal history of triple-negative breast cancer
- Personal history of male breast cancer
- Family history of breast cancer 50 years of age or younger
- Family history of multiple immediate relatives on the same side diagnosed with breast cancer

There are some genetic mutations that have been found to be associated with breast cancer. These genetic mutations can be identified through genetic testing. Some commonly known genes where a mutation is related to breast cancer are:

- BRCA1 and BRCA2
- PALB2
- TP53
- PTEN
- CDH1

Precision Oncology Options for Breast Cancer Patients

Options for Early-Stage Breast Cancer Patients

Currently, the only routine **genomic** tests available in Canada are for early-stage breast cancer, specifically hormone receptor-positive, HER2-negative breast cancers. These tests mainly assess the risk of recurrence, and include the following:

- Oncotype DX Breast Cancer Recurrence Test
- Oncotype DX Breast DCIS Test
- MammaPrint
- Prosigna Breast Cancer Prognostic Gene Signature Assay
- EndoPredict

Eligible early-stage breast cancer patients can have **genetic** testing to determine whether a different or more personalized approach to their care is needed.

Options for Late-Stage Breast Cancer Patients

While current routine genomic tests are only available for early-stage breast cancer, there are clinical trials in

progress that focus on potential treatments for patients with metastatic breast cancer. The BC Cancer Agency's [Personalized Onco-Genomics](#) or POG program gives hope to people with metastatic cancer who have run out of conventional treatments. By sequencing and analyzing their genomes, researchers and doctors can find new approaches or drugs to help these patients.

In the case of genetic testing, some breast cancer therapies have been specifically developed and approved to treat tumours with certain mutations: mutations in genes such as PIK3CA and ESR1 may be relevant for treatment selection for patients with metastatic ER-positive, HER2-negative breast cancer

Potential Future Benefits of Precision Oncology

As the understanding of breast cancer expands and new therapies are developed, treatment options in Canada are increasing. With the increase of precision medicine, it also has the potential to be more cost-effective and patient-centric for the healthcare system⁵.

For further reading on precision medicine in Canada, you can access a report from

Canada's Drug and Health Technology Agency (CADTH) [here](#). This report discusses the advances of precision medicine and the potential impact on the healthcare system by highlighting emerging technologies and the key issues that must be addressed to properly prepare healthcare systems for full use of precision medicine technologies.

Advocating for Yourself and Other Breast Cancer Patients

Precision oncology can feel complicated, and you may want to further educate yourself on how you can access personalized medicine. The Canadian Breast Cancer Network has also put together two advocacy guides specifically on genomic and genetic testing to educate you on these tests, as well as to provide ways to access them.

After learning about precision oncology, the next step you should take is to speak to your healthcare team. They can help you understand what tests you may benefit from and how to access them.

Questions you may ask your healthcare team about precision oncology may include the following:

- Is my type of breast cancer eligible for genomic testing?
- How may the results of genomic testing affect my treatment plan/outcome?

- Do my risk factors make me eligible for genetic testing?
- How may the results of genetic testing affect my treatment plan/outcome?

There are also initiatives that may help you access precision oncology tests such as genetic testing, if you do not qualify under your provincial or territorial guidelines. For example, in Toronto, Women's College Hospital's [The Screen Project](#) initiative aims to make BRCA1 and BRCA2 testing more accessible to Canadians.

Being that precision oncology is not known to many, you may also wish to **raise awareness** of precision oncology, its uses, and its benefits. Doing so can help increase its use in treating cancer. Below, we discuss avenues and actions you can take to do this.

Using Your Voice and Story to Raise Awareness

Sharing your personal story is a great way of raising awareness of precision oncology in Canada. Some of the most common platforms to share on are blogs, social media and media relations. You can determine which platform is the most useful or comfortable for you.

Blog Writing

Blogs are a great space to be creative and share your story exactly how you want. Your writing style will highlight your own unique expression and personality. In blog format, you decide how much or how little you choose to share. You may write one long blogpost on a precision oncology, or you may divide that topic into several shorter posts, each with their own focus. You may also create an entire blog dedicated to raising awareness on and about precision oncology. For example, if you have done genomic or genetic testing, you can share about this experience through a blog.

To start, bookmark blogs and websites that catch your eye and make note of the writer's style, the visual appearance

and overall feel of the website. This will help your creativity flow as you spend time doing your own work. Once you have started sharing your story, those reading your posts may comment and ask questions; be sure to respond. You may also consider re-sharing your posts to your social media accounts or to organizations and patient-centered groups looking for patient stories.

Learn more about blog writing using our [Digital Storytelling Toolkit](#).

Social Media

Social media is another great avenue for raising awareness and sharing your story. Like blogging, you can choose to dedicate an entire social media account to advocating for or sharing your experience with precision oncology. Or, you can make one-off posts on your current social media accounts. Whichever option you go with, be clear about your overall message and goal. You can tailor your content to whichever type of platform you prefer using. If you like to make videos, try YouTube and TikTok; if photography or graphic design is how you like to express your advocacy, try Instagram and Tumblr. If writing is more your style, try using Facebook and Twitter to get your message out. Like to tell a story or engage in a discussion? Think about starting a podcast.

The following tips and guidelines can be used to help you connect with other social media users, extending the reach of your story, inspiring a discussion and creating needed change, regardless of what platform you choose to use:

- Avoid using profanity or defamatory, libellous, offensive, abusive, discriminatory, or demeaning content (including images, videos, and links)
- Avoid content that is commercial in nature, e.g., sell products and services, or recruit fans and followers
- Don't make disparaging, threatening content that condone violence or illegal behaviour
- Don't offering unsupported health or medical advice
- Be careful not to share personal information such as your home address or phone number
- Don't make and share content that violate another's copyright or intellectual property
- Don't make excessive and repetitive content that could be considered to be spam or considered disruptive to the breast cancer community
- Avoid content that contains proprietary, confidential, sensitive, or non-public information

Some guidelines and tips to follow and do are as follows:

- Try to include images where possible since they tend to generate more engagement
- Make your posts mobile-friendly since many people will be accessing your post on smartphones or tablets
- Engage as much as possible with people who comment on your content
- If someone wants to learn more about precision oncology, have a link from a verified source that you can direct them to.

Learn more about using social media for advocacy with our [Digital Storytelling Toolkit](#)

Media Relations

Contacting the media as a form of advocacy allows you to raise awareness of precision oncology on a large scale. Media relations is a large umbrella that covers everything from radio stations to online magazines, to national publications. Regardless of whether you contact a print publication or a radio station, it is important to ensure that you tell your story and advocate for precision oncology in a manner that is newsworthy. Referring to our “Communicating Your Story” worksheet in our [Digital Storytelling Toolkit](#) will help you balance newsworthiness with focusing on the advocacy issue at hand.

Beyond the newsworthiness of your story, the overall advocacy message and the five W's – *Who, What, When, Where and Why* – news stories are chosen according to the following criteria:

- Audience impact
- Controversy
- Conflict
- Credibility and public awareness of those involved
- Emotional impact

Two popular avenues for media relations are publications (newspapers, magazines, blogs, etc.), or interviews (radio, television, podcast).

Publications

If you choose to share your story via a publication, you might consider sending a letter to the editor – a letter sent to a publication about issues of concern from a reader. These letters are meant to be published verbatim, so anything you write must be accurate and appropriate for the publication's audience. Keep in mind that newspapers can choose to edit and condense their letters, so keep your letters as short, clear, and concise as possible.

Interviews

If you are more interested in being interviewed, you might consider sending a media pitch note – a message meant to inform the media about your story. In a pitch note, you want to share your message in a way that can illustrate to the reporter how the story might unfold for their audience. The pitch note is your opportunity to introduce yourself, tell your story and explain why it's important that they highlight your story. A good idea would be to, when and if possible, mention any local support provided and complement your story with Canadian statistics and/or facts to help illustrate the issue. Ensure that your sources of information are credible.

Once an interview has been confirmed, get, and write down the following information, which will help make the process go smoothly:

- Name of the reporter/interviewer
- Length and date of the interview
- Deadline (date, time) for completing the story
- Details on the topic or the desired angle
- Names of people to be interviewed (is it just you or are there other interviewees and/or angles?)
- If the interview will be live or taped
- The type of interview (audio, visual or written)

Read more about raising awareness through contacting media relations in our [Digital Storytelling Toolkit](#).

Resources

Patient Advocacy Resources:

Canadian Breast Cancer Network (Submit a Story to Our Blog)

Rethink Breast Cancer

Look at a list of our partner organizations [here](#).

Precision Oncology Resources:

CADTH's 2023 [Watch List](#): Top 10 Precision Medicine Technologies and Issues

Precision oncology and breast cancer: considering Canada's approach in an evolving landscape

Canadian Cancer Society, Precision Medicine

Accessing Genetic Testing in Canada

Accessing Genomic Testing in Canada

Questions & Experts: A Genetic Counsellor Answers your Questions about Genetic Testing (CBCN Webinar)

Understanding the Role of Genetic Test (CBCN Webinar)

Biomarkers and Biomarker Testing

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