Understanding

Clinical Trials

MitoCanada believes in the power of research. Clinical trials are studies conducted to acquire important data. They are essential to the discovery and advancement of medicine and medical knowledge.

When you share your real-life experiences by participating in a clinical trial, you are supporting the process of developing medicines that have the potential to impact patient care and quality of life. Participation in a clinical trial is voluntary and can offer many benefits, but there may also be risks. When deciding whether to join a clinical trial, it is important to be informed so you can make the best possible decision for you.

What are Clinical Trials?

A clinical trial is a form of research which investigates the safety and efficacy of new medical therapies, devices, and procedures. Efficacy refers to the performance of an intervention under controlled circumstances. Clinical trials often occur in hospitals, medical clinics, universities and doctor's offices.

Various types of research studies can be used to acquire the scientific data needed to approve a drug or intervention. These include:

- **Randomized Controlled Trial (RCT)** In these studies, participants are arbitrarily assigned to either an experimental or control group. This is done to gain data on the variable(s) being studied.
- **Cohort Study:** In cohort studies, two groups who share common characteristics are exposed to different variables over a long period of time.
- **Case-Control Study:** These studies compare two groups of people where participants in one group have a disease or condition that those in the other group do not have.
- **Case Series Study:** These studies compile data that describe characteristics and/or outcomes of a group of individuals over time.
- **Expert Opinion Study:** This type of study compiles opinions made by a designated group of experts based on scientific evidence and/or expert opinion

Each trial is comprised of a robust group working together. These include:

- **Participants:** People who volunteer to take part in a clinical trial. These can be patients with a disease or healthy people who volunteer.
- **Investigator(s)** The individuals who lead the clinical trial or research study. These qualified individuals prepare and execute the study, monitor safety, collect and analyze data, and publish results.
- **Study Coordinator:** The individual who works with and supervises the investigators, participants, and research team.
- **Sponsors** Drug/device companies and/or research organizations (hospitals, universities, foundations) that provide funding for the trial.
- **Institutional Review Board (IRB):** A group of individuals who approve, monitor and review the clinical trial to ensure participants are protected and treated appropriately.

Clinical Trial - Study Details

Before a drug or device makes it to the clinical trial stage, it must undergo extensive laboratory research. This can involve years of experiments in animals, tissue samples, or human cells. When this level of research is successful, the data can be sent to Health Canada for approval to continue research in humans. Once a drug/device has been approved for trial on humans, testing is done in phases.

mitolingo

Study Design - the methods and procedures used to collect and analyze data on variables specified in the study.

Primary Outcome Measures - the most important of all the results being examined in the trial study.

Inclusion Criteria - the specific characteristics a prospective participant must have to join the study.

Exclusion Criteria - the characteristics that disqualify prospective participants from joining a study.

Clinical Trials – Protecting Participants

Strict rules must be followed when conducting clinical trials in Canada. These rules protect participants. All information must be scientifically useful, side effects must be monitored and reported, and records must be meticulously maintained and inspected regularly. At all times, participants' rights, safety, and well-being must be protected.

Sponsors must submit applications to Health Canada for review to ensure the best interests of trial participants are being considered and any risks are as low as possible. Health Canada reviews clinical trial applications to see if the goals of the trial are achievable, to ensure an investigational drug or device will be administered properly, and to affirm that the drug or device has potential benefits not found in current treatments.

Phases of Clinical Trials

1. **Phase 1** - For the first time the experimental drug/device is tested on a small group of individuals.
This phase determines drug/device safety, safe dosage range and any side effects.

2. **Phase 2**- The drug/device is given to a set group, usually 100 +. The study now collects information about how effective a drug is in treating a disease or condition, the best dosage and safety in a larger group.

3. **Phase 3**- The drug/device is tested on a group of 1000 +, to test its effectiveness and monitor side effects in a much greater population. They collect information to ensure it's safe for the market and how it compares to existing treatments on the market.

4. **Phase 4**- This phase happens after a new drug/device is approved and collects data while on the market. It studies the best long-term use, benefits and risks.

Patient Involvement Benefits Development

Patient involvement is vital as it brings real-life perspectives and experiences to a trial and gathers essential data to understand and assess whether a new drug or device works. Patient participation helps researchers, clinicians, regulators, and insurance providers understand the benefits and needs of new drug or device development. Patient input makes better studies by improving the trials' purpose, protocols, patient-reported outcomes (PRO's), real-world evidence (RWE) and quality of life (QOL) measures

mitolingo

Patient-reported outcomes (PROs): measures of how patients feel or what they can do in the context of their health status

Real-world evidence (RWE): is the clinical evidence about the usage and potential benefits or risks of a medical product derived from analysis of RWD

Real-world data (RWD): are data relating to patient health status and/or the delivery of health care routinely collected from various sources, including electronic health records, medical claims data, and data from product and disease registries.

Quality of life (QOL) measures: evaluate core domains such as disease state and physical symptoms, functional status (e.g., performing daily activities), psychological and emotional functioning, and social functioning.

* Terminology from National Institutes of Health

Participating in Clinical Trials

Clinical trials bring new hope and opportunities to patients with mitochondrial disease. Ensuring patients are directly involved in finding the best healthcare possible. With people participating in clinical trials, ground-breaking treatments will make it into the hands of those needing them.

When you participate in a clinical trial:

- You have the chance to be more involved in advancing research and creating a better quality of life for yourself and others with mitochondrial disease.
- A trial can potentially create better access to new treatment options that may enhance your current health and quality of life.
- A trial can potentially offer medicine at no cost.
- A trial can provide an opportunity for better health care with new research/treatments.

To find mitochondrial disease clinical trials, visit MitoCanada's dedicated clinical trial page: https://mitocanada.org/news-research/current-clinical-trials-listing/

Concerns about Participating

Patients can be hesitant to participate in clinical trials because of a fear that a new drug/device won't be safe, will aggravate their current disease/symptoms, they may be assigned to a placebo group (non-active ingredient) or will be assigned to a group who will receive an existing drug already on the market. Patients may feel clinical trial participation isn't an option because of a decline in their current health or fear they might develop short and/or long-term side effects caused by the investigational drug/device. Parents may worry a trial drug/device might impact their child differently than an adult. Patients and parents may have concerns about the stress of travel and numerous tests, hospital admissions, expenses and a potentially lengthy time commitment associated with trial participation.

These are real and common concerns patients and families have. To address these hesitations, we've curated information to provide clarity and even dispel commonly held myths about clinical trials:

1. Clinical trials are dangerous because they use untested drugs.

Keeping you safe when you participate in a clinical trial is a top priority for everyone involved in the trial.

All clinical trials are reviewed before they start by an institutional review board (IRB), a committee of doctors, scientists and community members responsible for protecting clinical trial participants. The purpose of an IRB review is to ensure that appropriate steps are taken to protect your rights and safety before and during the trial.

Clinical trial participants receive an investigational drug/device ONLY after it has gone through extensive testing. This testing indicates that the drug/device is likely to be safe and effective in humans. Researchers frequently and rigorously assess and monitor participants' safety during the clinical trial. These are just some of the ways in which your safety and well-being are prioritized before a clinical trial begins and throughout the trial process.

2. You must give up your regular treatments to participate in a clinical trial.
Some researchers want patients to stay on their current medical treatment, hoping that combining an existing treatment and a new potential treatment will give participants the best results. If a participant hasn't seen any benefits from their current treatment, joining a clinical trial investigating a new treatment could be a way to fight their disease.

You can always go back to your original treatment if the study is not working for you or you have a negative reaction to the study drug.

3. Once I join a clinical trial, I can't change my mind and leave.
As the patient, you are **always** in complete control. If you no longer wish to participate in a trial, you can withdraw at any time, even after you have signed an informed consent form and received the investigational drug (or placebo). However, it would be best to always let the clinical trial team know before you leave the trial because some medicines must be stopped safely with the research team's help.

4. Clinical trials are not confidential.
When you enroll in a trial, some personal information will need to be collected and shared with the trial study team, study sponsor and Health Canada. This generally includes date of birth, medical history, any results collected throughout the trial, etc. This information is kept confidential in that your information is given a blinded number to protect your identity throughout the trial.

5. Participating in a clinical trial means you may have to invest personal money into it.
Clinical trial participants rarely have to incur costs related to participating in a trial. There are two types of costs associated with a clinical trial: research costs and patient care costs.

Research costs are those associated with conducting the trial and are typically covered by a study sponsor, such as the biopharmaceutical company, and are not the patient's responsibility.
The research sponsor supporting the clinical trial does not cover patient care costs. Examples of these costs include your routine doctor visits, clinical laboratory tests, and X-rays.

Ask the clinical trial research team if there are costs you may be required to cover and check with your health insurance provider about coverage for clinical trial participants before deciding to participate in a clinical trial.

6. I won't be able to continue seeing my current doctor while in a clinical trial.
As a patient participating in a clinical trial, you can always continue receiving regular healthcare from your doctor and healthcare team. There should be continuous communication between you and your doctor. Your current doctor can help you find a clinical trial and support you throughout the trial with regular care.

Realities of Rare Disease and Recruiting for Clinical Trials

1 in 12 Canadians (⅔ of them children) are affected by rare diseases. The small number of eligible patients per disease makes it very hard to recruit participants for trials. Even when diagnosed with a rare disease, only 5% of rare diseases have therapies, and only 60% of new treatment options from the US and Europe come to Canada. Most of those new treatment options do not enter Canada until years after receiving approval in other countries.

When considering the geographical factors, inclusion/exclusion criteria and whether a patient represents the population of their rare disease, these components create additional limitations when finding and joining clinical trials.

A limited number of patients leads to difficulties in creating convincing data and reaching statistical significance on a trial's safety and effectiveness. Because of this, some trials may be unable to complete their study.

How are Clinical Trials for Rare Diseases Different?

Finding clinical trials can be more difficult for patients with rare diseases. Clinical trials can take years; some may even outlast a participant's life expectancy. However, the limitations of rare disease trials are taken into consideration, as we see with the US Orphan Drug Act and patient rules in Canada, which promote the access and development of new drugs for rare diseases.

Understanding a Clinical Trial Opportunity

To ensure you best understand a clinical trial opportunity, it is important to do your research. The trial research team wants to ensure you have all the information you need to make an informed decision. Consider asking the following to learn more about a clinical trial opportunity:

Purpose: What is the purpose of this clinical trial?
Treatment options: Are there treatment options currently available to me? How might an investigational drug from the clinical trial benefit or worsen my disease?
Risks: What potential side effects, risks or complications could arise during the trial?
Benefits: What are the potential benefits of participating in a clinical trial?
Trial Coverage: Will I be compensated for any travel, trial-related or unexpected costs during the trial? After the trial, will I have access to this new drug?

Questions to Ask:

- Does the study involve a placebo or treatments already on the market?
- Can I leave the trial at any time?
- Will I be able to continue seeing my doctor during the study?
- Will I be able to continue taking my regular medications during the study?
- If there are side effects, can they be treated during the study?
- How much time will participating take, and is travel necessary?
- Can the investigators take me out of the study, even if I want to stay in it?
- Do I have to pay to participate in the study? If so, does insurance cover it? Also, are other expenses covered? (travel, hotels, missed work, etc.)
- Is compensation given for participating in the study?

Participation in a clinical trial could be an option for you. When considering the personal and community benefits vs. risks of a clinical trial, you can make an informed decision about participating. With an understanding of the clinical trial processes, misconceptions answered, and a curated list of questions to assist you in gathering information, we hope you feel empowered to explore the clinical trial opportunities available. MitoCanada is with you every step of the way to help energize your life.

This education guide has been developed by MitoCanada for information purposes only. It should not be used to replace the medical advice of your physician or other qualified healthcare provider who knows you and your full medical history.

About Us

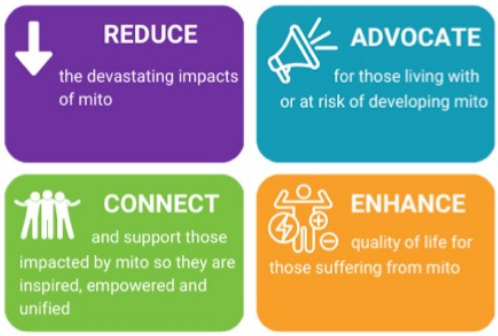
Since 2010, MitoCanada has supported those living with mitochondrial disease with information, initiatives and opportunities to inspire, empower and connect while enhancing quality of life. We develop education and awareness programs. We advocate for those living with, or at risk of developing, mitochondrial disease, and we fund research that is patient-focused and transformational.

MitoCanada is the only national charity dedicated to mitochondrial disease. We are the voice of Canadians living with or at risk of developing mitochondrial disease.

Request for Support

MitoCanada is a national charity governed by a volunteer board of directors. We rely on donations from the public and the generosity of our partners to develop and deliver support and education programs and resources. Please consider including MitoCanada as one of your charities of choice to support.

Through research and public education, we aim to:



Contact Us

MitoCanada Foundation
30022-478 Dundas Street West
Oakville, ON, L6H 7L8
info@mitocanada.org

Make a Donation

Make a donation at:
www.mitocanada.org/donate

Citations:
Insightful Moments. "Finding a Clinical Trial". PTC Therapeutics, 2021, https://admin.ptcbio.com/en/wp-content/uploads/sites/3/2022/01/FindingAClinicalTrialRoadmap_EN.pdf
"I Am in a Clinical Trial." *Clinical Trials Ontario*, 21 Mar. 2019, https://www.ctontario.ca/patients-public/learn-more-about-clinical-trials/i-am-in-a-clinical-trial/.
"What Are Clinical Trials and Studies?" *National Institute on Aging*, U.S. Department of Health and Human Services, https://www.nia.nih.gov/health/what-are-clinical-trials-and-studies/.