OSTEOGENESIS IMPERFECTA FOUNDATION

What You Need to Know about Clinical Trials

Clinical trials are an essential part of developing new treatments (like medications, and vaccines) and test whether a specific treatment under consideration is effective and safe. Trials start with a small number of volunteer test subjects, and can grow to include thousands, or tens of thousands, of participants. Many clinical trials are *controlled*, *randomized*, and *double-blind.*

- **Controlled**: a clinical study with a group who receive the new treatment being studied are compared to a matching set of people who instead receive another treatment like a placebo, a harmless "fake" treatment (a placebo-controlled trial), a comparator drug (often a drug that is already approved for the condition under study), or different dosages of the study drug
- **Randomized**: participants are randomly assigned to either receive the new treatment or to be in the control group
- **Double-blind**: both the medical practitioners and the clinical study participants do not know who is receiving the new treatment and who is receiving a placebo (either the sponsor of the study knows the "key" to who is receiving the study drug or a designated person not directly involved in the study has the key)

Overall, these criteria help remove bias from a clinical study and ensure that results are accurate. In the US, the National Institute of Health (NIH) and the Food and Drug Administration (FDA) monitor clinical trials to ensure their safety and accuracy. While clinical studies of treatments for OI and other rare diseases have some differences, their basic structure is the same. All enroll volunteers at each phase, following protocols set out at the beginning of the study.

The phases of a study include:

- **Preclinical or Non-clinical testing**: scientists give the treatment to animals (like mice) to see if it produces a response and is safe
- **Phase 1**: a small group of human participants are examined; looking for safety, proper dosage amounts and to confirm it has some response in humans. Phase 1 may be done in healthy volunteers or in patients with the disease, or at-risk of the disease, under study.
- **Phase 2**: hundreds of people, further tests safety and if it stimulates response in different types of people
- **Phase 3**: thousands or tens of thousands of people; determine if vaccine or treatment is effective; a vaccine needs to be at least 50%-70% effective in protecting people. These are large enough to find relatively rare side effects that might be missed in earlier studies
- **Phase 4:** sometimes used after a treatment has been approved, this phase follows thousands of individuals and is used to find any long term effects of the treatment

Individuals with OI play an especially important role in the outcome of clinical trials because they have a rare condition. Compared to more common conditions, rare disease based clinical trials usually have far fewer participants that in the example listed above, making every volunteer even more valuable to the research process.

This article was prepared with assistance from Robert "Sandy" Sandhaus, MD, PhD, OIF Medical Advisory Council Member, September 2020.

OSTEOGENESIS IMPERFECTA FOUNDATION

Clinical Trials and OI Questions

How do clinical trials focused on treating people with OI differ from trials focused on a more general population?

Since OI is a rare disease, it is difficult to find hundreds, let alone thousands, of participants. Therefore, rare disease clinical trials involve fewer participants at each phase. More information on clinical trials and how they differ for rare diseases can be found in Dr Adam Hartman's "An Introduction to Clinical Trials" presentation from July 23, 2020.

Are clinical trials safe to participate in?

While potential risks differ trial to trial and person to person, participating in clinical trials is safe, overall. Due to regulations in the US, volunteers are monitored at every stage of their involvement. Each participant in a clinical trial is informed about known and potential risks of the treatment being studied and will need to make an informed decision about whether those risks outweigh the benefits to themselves and the community when deciding whether to join the study.

How can I participate in clinical trials addressing OI?

The easiest way to learn more about current and upcoming clinical studies is to enroll in the OI Registry. Once you enter your information into this registry, the OIF or researchers will have access to your deidentified information and may ask you to volunteer in a study. To find out about more information on specific clinical studies, you can also go to Clinicaltrials.gov and search for "osteogenesis imperfecta" in the "Condition or Disease" field. Here you will find an updated list of studies related to OI around the world.

Where can I learn more about clinical studies relating to OI?

The best way to hear more about potential clinical studies you can enroll is by enrolling at the OI Registry. More information can be found on the OIF website. To find out about more information on specific clinical studies, you can also go to Clinicaltrials.gov and search for "osteogenesis imperfecta" in the "Condition or Disease" field. Within this search, you can filter studies by recruiting status, location, phase, and other criteria.

This article was prepared with assistance from Robert "Sandy" Sandhaus, MD, PhD, OIF Medical Advisory Council Member, September 2020.