

Glossary of Terms Used in Clinical Trials

ADVERSE REACTION: (Adverse Event.) An unwanted effect caused by the administration of drugs. Onset may be sudden or develop over time. They may or may not be related to a treatment. For example, if you are given a drug to treat an illness and you become sick (e.g. dizziness, stomach ache or a rash), this would be described as an adverse event. If your sickness is caused by the drug, this would be called a side effect. Clinical trials will often look at both short- and long-term adverse events related to a treatment. Some adverse events may be serious and need to be reported to regulatory authorities (also see [side effects](#)).

ARM: Any of the treatment groups in a randomized trial. Most randomized trials have two "arms," but some have three "arms," or even more (also see [randomised controlled trial](#)).

ADHERENCE: Sticking to the treatment allocated. For example, if you are asked to take tablets as part of a trial, it's about taking the right number of tablets at the right time, and, if appropriate, finishing the course

BASELINE: This can have different meanings as follows: 1. Information gathered at the beginning of a study from which variations found in the study are measured. 2. A known value or quantity with which an unknown is compared when measured or assessed. 3. The initial time point in a clinical trial, just before a participant starts to receive the experimental treatment which is being tested. At this reference point, measurable values such as blood pressure are recorded. Safety and efficacy of a drug are often determined by monitoring changes from the baseline values.

BIAS: In research, the term 'bias' is used when a particular design or analysis is likely to favour a particular outcome. In a clinical trial, if one treatment is always given to participants who have a more severe form of a disease, then this treatment will appear worse than others. Bias can also happen if a researcher knows about the treatment a participant is receiving, and this interferes with the researcher's ability to be impartial. It is important to avoid bias in health research, as it can distort the results and could lead to unsafe or ineffective treatments being licensed for use, or useful treatments being overlooked. Researchers try to avoid bias by using [randomisation](#) and by 'blinding' those assessing the results of treatments, which may be both the patient and the doctor.

BLIND: Blinding means that whoever is receiving or assessing the effects of treatment does not know which treatment the person has received. This helps to prevent [bias](#). Sometimes the participant will assess the effects of treatment, sometimes the researcher will, and sometimes a researcher who is independent of the trial will carry out this assessment.

In a double blind trial, neither the participant, the doctor or the researchers running the trial will know which treatment the participant is receiving. The aim is to avoid the hopes and expectations about the treatment, as well as those of the researchers, influencing the way the benefits and risks

are assessed. It is not always possible to avoid researchers, doctors and participants knowing which treatment they are having. For example, the trial may be comparing surgery with no surgery. If the researcher knows which treatment a participant is receiving, it may be necessary for an independent researcher, who has not been involved in conducting the trial, to assess the impact of the different treatments. (See also [single blinded](#) and [double blinded](#)).

CLINICAL : Founded on observation and treatment of participants, as distinguished from theoretical or basic science.

CLINICAL INVESTIGATOR: A medical researcher in charge of carrying out a clinical trial's protocol.

CLINICAL TRIAL: Clinical trials are research studies involving participants that compare a new or different type of treatment with the best treatment currently available. They test whether the new or different treatment is safe and effective by comparing it to what already exists. No matter how promising a new treatment may appear during tests in a laboratory, it must go through clinical trials before its benefits and risks can really be known. This also applies to many different forms of treatment, such as surgery, radiotherapy, physical and behavioural interventions, not just drugs. If there is no standard treatment, the new treatment is usually compared with no treatment or with a 'dummy' treatment (or placebo).

Carefully conducted clinical trials are the fastest and safest way to find treatments that work in people. Trials are in four phases: Phase I tests a new drug or treatment in a small group; Phase II expands the study to a larger group of people; Phase III expands the study to an even larger group of people; and Phase IV takes place after the drug or treatment has been licensed and marketed.

COHORT: In epidemiology, a group of individuals with some characteristics in common.

CONTRAINDICATION: A specific circumstance when the use of certain treatments could be harmful.

CONTROL GROUP: The standard by which experimental observations are evaluated. In many clinical trials, one group of patients will be given an experimental drug or treatment, while the control group is given either a standard treatment for the illness or a placebo (See also [placebo](#) and [standard treatment](#)).

CROSS OVER TRIALS: A study with treatment changing partway through the trial. For example, if a trial is comparing the effectiveness of 2 different sorts of exercise, you might take part in exercise A for the first part of the trial and then exercise B for the second, then perhaps back to A again – and so on. You cross over from one treatment group to the other, and comparisons are then made between how well you felt during the different periods.

DATA SAFETY AND MONITORING COMMITTEE: Most trials have an independent data monitoring committee that follows the progress of the trial and makes sure it is being run properly. The people on the data monitoring committee are experts in clinical trials, statistics or in the disease being studied. They are independent of the researchers running the trial. If they think that participants are

experiencing serious or unexpected side effects, or if evidence has emerged that one of the treatments being compared is clearly better than the others, they can advise that a trial is stopped.

DOUBLE-BLIND STUDY: A clinical trial design in which neither the participating individuals nor the study staff knows which participants are receiving the experimental drug and which are receiving a placebo (or another therapy).

EFFICACY: (Of a drug or treatment). The maximum ability of a drug or treatment to produce a result regardless of dosage. A drug passes efficacy trials if it is effective at the dose tested and against the illness for which it is prescribed. Phase II clinical trials gauge efficacy, and Phase III trials confirm it.

ELIGIBILITY CRITERIA: Summary criteria for participant selection; includes Inclusion and Exclusion criteria. For example, the eligibility criteria for a trial looking at bi-polar disorder might say that the only people who can take part are people who are over 18 but under 80, and who have bi-polar disorder, but no other health problems. (See also **Inclusion/Exclusion Criteria**)

ENDPOINT: Overall outcome that the protocol is designed to evaluate. Common endpoints are severe toxicity, disease progression, or death.

ENROLLING: The signing up participants into a study. Generally this process involves evaluating a participant with respect to the eligibility criteria of the study and going through the **informed consent** process.

EPIDEMIOLOGY: The branch of medical science that deals with the study of incidence and distribution and control of a disease in a population. An epidemiological study looks at how certain exposures (for example, an exposure may be secondary smoke or unprotected sex) or 'risk factors' affect health outcomes.

EVIDENCE BASE: An evidence base is a collection of the best available scientific research currently available about a healthcare topic, such as how well a treatment or a service works. This evidence is used by health and social care professionals to make decisions about the services that they provide and what care or treatment to offer people who use services.

HEALTH ECONOMICS: In some clinical trials, it can be important to compare how much different treatments or treatment plans cost, as well as how well they work. This can be particularly important when two (or more) treatments are equally effective, but where one costs much more than the other. The gathering and analysis of information about costs is called health economics. Health economic evaluation gives researchers, policymakers and those who deliver care a way to think about health benefits and costs. This enables them to try to get the best health gain for the most people, within a limited budget. For example, economic costs involved in treating cancer include the cost of treatment, care and recovery, as well as the costs of prevention and training of healthcare personnel. Other costs include the economic costs of illness and premature death, the loss of economic productivity, decreases in the productivity of family members, and welfare and health insurance expenditure.

HYPOTHESIS: An assumption put forward as a basis for reasoning or argument, or as a guide to experimental investigation.

INCLUSION/EXCLUSION CRITERIA: The medical or social standards determining whether a person may or may not be allowed to enter a clinical trial. These criteria are based on such factors as age, gender, the type and stage of a disease, previous treatment history, and other medical conditions. It is important to note that inclusion and exclusion criteria are not used to reject people personally, but rather to identify appropriate participants and keep them safe.

Exclusion criteria determine who is not able to join a trial – for example, many trials exclude women who are pregnant, or who may become pregnant, to avoid any possible danger to a baby. Trials may also exclude people who are taking a drug that interacts with the treatment being studied. Inclusion criteria determine who can join a trial. For example, some trials only include people of a certain age, or at a particular stage in their illness. You may have to have a medical examination before a trial to assess whether you are suitable to take part.

INFORMED CONSENT: The process of learning the key facts about a clinical trial before deciding whether or not to participate. It is also a continuing process throughout the study to provide information for participants. To help someone decide whether or not to participate, the doctors and nurses involved in the trial explain the details of the study. Even after giving informed consent, a participant is free to withdraw from the trial at any time without giving a reason and without it affecting your healthcare.

INTENT TO TREAT: Analysis of clinical trial results that includes all data from participants in the groups to which they were randomized even if they never received the treatment.

INTERVENTIONS: Within the context of healthcare, an intervention is something that is given to a participant as a treatment. For example, giving a drug is an intervention. Counselling and surgery are also interventions. Within the context of a clinical trial, the ‘intervention arm’ is the name given to the group of people receiving the new treatment or treatment plan.

META-ANALYSIS: A meta-analysis involves a researcher bringing together the numerical results of all previous research (usually randomised trials) about one particular treatment or plan. A meta-analysis can be important because it allows us to pick up small differences between treatments. These differences can be very hard to spot, so trials need to include large numbers of participants to pick these up. Many trials are not big enough, so we cannot be sure whether any differences that we find are because of real differences between the treatments or just due to chance. By bringing together the results of all trials of a particular treatment in a meta-analysis, we can look at the experience of more participants than in a single trial. This gives a more reliable and accurate measurement of the effect of the treatment and the best way of seeing which treatments are best.

OBSERVATIONAL STUDY: In an observational or epidemiological study, researchers do not offer different treatments as part of the research. They study how certain 'risk factors' and disease outcomes are related.

OPEN-LABEL TRIAL: A clinical trial in which both doctors and participants know what is being administered.

OUTCOME: Outcomes are changes in a participant's health state. For example an outcome might be that your blood pressure is reduced as a result of taking tablets prescribed by the doctor. Outcome measures are used to measure the effects of a treatment. They might include physical measurements - for example measuring blood pressure, or psychological measurements - for example measuring people's sense of well-being. If someone takes part in research, they may be asked questions, or may be asked to have extra tests to assess how well the treatment or service has worked.

PEER REVIEW: Review of a clinical trial by experts chosen by the study sponsor. These experts review the trials for scientific merit, participant safety, and ethical considerations.

PHARMACOKINETICS: The processes (in a living organism) of absorption, distribution, metabolism, and excretion of a drug or vaccine.

PHASE I TRIALS: Initial studies to determine the metabolism and pharmacologic actions of drugs in humans, the side effects associated with increasing doses, and to gain early evidence of effectiveness; may include healthy participants and/or patients.

PHASE II TRIALS: Controlled clinical studies conducted to evaluate the effectiveness of the drug for a particular indication or indications in patients with the disease or condition under study and to determine the common short-term side effects and risks.

PHASE III TRIALS: Expanded controlled and uncontrolled trials after preliminary evidence suggesting effectiveness of the drug has been obtained, and are intended to gather additional information to evaluate the overall benefit-risk relationship of the drug and provide an adequate basis for physician labeling.

PHASE IV TRIALS: Post-marketing studies to delineate additional information including the drug's risks, benefits, and optimal use.

PLACEBO: A placebo is an inactive pill, liquid, or powder that has no treatment value. It looks, smells and tastes like the treatment being tested, so that people don't know if they are taking the dummy treatment or the treatment being tested. In clinical trials, experimental treatments are often compared with placebos to assess the treatment's effectiveness. (See also **Placebo Controlled Study**).

PLACEBO CONTROLLED STUDY: A method of investigation of drugs in which an inactive substance

(the placebo) is given to one group of participants, while the drug being tested is given to another group. The results obtained in the two groups are then compared to see if the investigational treatment is more effective in treating the condition.

PLACEBO EFFECT: A physical or emotional change, occurring after a substance is taken or administered, that is not the result of any special property of the substance. The change may be beneficial, reflecting the expectations of the participant and, often, the expectations of the person giving the substance.

PRECLINICAL: Refers to the testing of experimental drugs in the test tube or in animals - the testing that occurs before trials in humans may be carried out.

PREVENTION TRIALS: Refers to trials to find better ways to prevent disease in people who have never had the disease or to prevent a disease from returning. These approaches may include medicines, vaccines, vitamins, minerals, or lifestyle changes.

PROTOCOL: A study plan on which all clinical trials are based. The plan is carefully designed to safeguard the health of the participants as well as answer specific research questions. A protocol describes what types of people may participate in the trial; the schedule of tests, procedures, medications, and dosages; and the length of the study. While in a clinical trial, participants following a protocol are seen regularly by the research staff to monitor their health and to determine the safety and effectiveness of their treatment.

QUALITY OF LIFE: As well as measuring the physical effects of a treatment (for example changes to blood pressure) many trials now try to assess the impact of treatments on people's quality of life. For example, a 'quality of life' study might ask about your mood and general sense of well-being, whether you feel more tired than usual, whether you are managing to do more things than before and if your sleep patterns have changed.

RANDOMIZATION: A method based on chance by which study participants are assigned to a treatment group. Randomization minimizes the differences among groups by equally distributing people with particular characteristics among all the trial arms. The researchers do not know which treatment is better. The decision about which treatment you'll receive is based on chance. Randomisation is the best way of ensuring that the results of trials are not biased.

RANDOMIZED CONTROLLED TRIAL: Many clinical trials are randomised controlled trials (RCTs). Clinical trials aim to make a fair comparison between a new treatment and the current treatment on offer, or between two (or more) existing treatments, to see which one works best. A *controlled* trial compares two groups of people: an experimental group who receive the new treatment, and a control group who receive the usual treatment or a placebo. The control group allows the researchers to see whether the treatment they are testing is any more or less effective than the usual or standard treatment. If you take part in a *randomised* controlled trial, you will have an equal chance of receiving any of the treatments being compared. The decision about which treatment you'll receive is random – or based on chance.

RECRUITMENT STATUS: Indicates the current stage of a trial, whether it is planned, ongoing, or completed. Possible values include:

- Not yet recruiting: participants are not yet being recruited or enrolled
- Recruiting: participants are currently being recruited and enrolled
- Enrolling by invitation: participants are being (or will be) selected from a predetermined population
- Active, not recruiting: study is ongoing (i.e., patients are being treated or examined), but enrollment has completed
- Completed: the study has concluded normally; participants are no longer being examined or treated (i.e., last patient's last visit has occurred)
- Suspended: recruiting or enrolling participants has halted prematurely but potentially will resume
- Terminated: recruiting or enrolling participants has halted prematurely and will not resume; participants are no longer being examined or treated
- Withdrawn: study halted prematurely, prior to enrollment of first participant

RISK-BENEFIT RATIO: The risk to individual participants versus the potential benefits. The risk/benefit ratio may differ depending on the condition being treated.

SIDE EFFECTS: Any undesired actions or effects of a drug or treatment. Negative or adverse effects may include headache, nausea, hair loss, skin irritation, or other physical problems. Experimental drugs must be evaluated for both immediate and long-term side effects.

SINGLE-BLIND STUDY: A study in which one party, either the investigator or participant, is unaware of what medication the participant is taking.

STANDARD TREATMENT: A treatment currently in wide use and approved, considered to be effective in the treatment of a specific disease or condition.

STANDARDS OF CARE: Treatment regimen or medical management based on state of the art participant care.

STATISTICAL SIGNIFICANCE: The probability that an event or difference occurred by chance alone. In clinical trials, the level of statistical significance depends on the number of participants studied and the observations made, as well as the magnitude of differences observed.

SYSTEMATIC REVIEWS: Systematic reviews aim to bring together the results of all studies that have been carried out around the world addressing a particular research question. They provide a

comprehensive and unbiased summary of the research. For example, one clinical trial may not give a clear answer about the effectiveness of a treatment. This might be because the difference between the treatments being tested was very small, or because only a small number of people took part in the trial. So systematic reviews are used to bring the results of a number of similar trials together, to piece together and assess the quality of all of the evidence. Combining the results from a number of trials may give a clearer picture. When researchers combine the numerical results of these trials and compare them, this is called a [meta-analysis](#).