## Protocol Development

Protocol development and complexity depends greatly upon the type of clinical study being conducted. For instance, interventional, multi-site, greater than minimal risk studies require more protocol content than minimal risk and single site.

When developing a successful study design and writing a protocol, the researcher must address various essential components- including the types of data being collected, (e.g. safety, laboratory), data handling and record keeping, outcome measures, how monitoring and reporting will occur, and data analysis.

A research protocol is a document that describes the background, rationale, objectives, design, methodology, statistical considerations, and organization of a clinical research project.

**TEMPLATES:** For an example of a protocol format that complies with ICH GCP requirements, please refer to this template:

* [Protocol Template (simple)](https://www.uth.edu/ctrc/documents/Protocol Template - simple.docx)
* [Protocol Template (complex)](https://www.uth.edu/ctrc/documents/ProtocolTemplate-complex.docx)
* [NIH Templates for Clinical Trials and Social Behavior Trials](https://osp.od.nih.gov/clinical-research/clinical-trials/)
* [NIH e-Protocol Writing Tool](https://e-protocol.od.nih.gov/index.html)

According to [ICH E6 Good Clinical Practice Guidelines](https://www.fda.gov/media/93884/download" \t "https://www.uth.edu/ctrc/trial-conduct/_blank), a clinical trial protocol should include the following information:

**General Information**

* Protocol title, protocol identifying number, and date. Any amendment(s) should also bear the amendment number(s) and date(s).
* Name and address of the sponsor and monitor (if other than the sponsor).
* Name and title of the person(s) authorized to sign the protocol and the protocol amendment(s) for the sponsor
* Name, title, address, and telephone number(s) of the sponsor's medical expert (or dentist when appropriate) for the trial.
* Name and title of the investigator(s) who is (are) responsible for conducting the trial, and the address and telephone number(s) of the trial site(s).
* Name, title, address, and telephone number(s) of the qualified physician (or dentist, if applicable), who is responsible for all trial-site related medical (or dental) decisions (if other than investigator).
* Name(s) and address(es) of the clinical laboratory(ies) and other medical and/or technical department(s) and/or institutions involved in the trial.

**Background Information**

* Name and description of the investigational product(s).
* A summary of findings from nonclinical studies that potentially have clinical significance and from clinical trials that are relevant to the trial.
* Summary of the known and potential risks and benefits, if any, to human subjects.
* Description of and justification for the route of administration, dosage, dosage regimen, and treatment period(s).
* A statement that the trial will be conducted in compliance with the protocol, GCP, and the applicable regulatory requirement(s).
* Description of the population to be studied.
* References to literature and data that are relevant to the trial and that provide background for the trial.

**Trial Objectives and Purpose:** A detailed description of the objectives and the purpose of the trial.

**Trial Design:** The scientific integrity of the trial and the credibility of the data from the trial depend substantially on the trial design. A description of the trial design should include:

* A specific statement of the primary endpoints and the secondary endpoints, if any, to be measured during the trial.
* A description of the type/design of trial to be conducted (e.g., double-blind, placebo-controlled, parallel design) and a schematic diagram of trial design, procedures, and stages.
* A description of the measures taken to minimize/avoid bias, including: (a) Randomization and (b) Blinding.
* A description of the trial treatment(s) and the dosage and dosage regimen of the investigational product(s). Also include a description of the dosage form, packaging, and labelling of the investigational product(s).
* The expected duration of subject participation, and a description of the sequence and duration of all trial periods, including follow-up, if any.
* A description of the "stopping rules" or "discontinuation criteria" for individual subjects, parts of trial, and entire trial.
* Accountability procedures for the investigational product(s), including the placebo(s) and comparator(s), if any.
* Maintenance of trial treatment randomization codes and procedures for breaking codes.
* The identification of any data to be recorded directly on the CRFs (i.e., no prior written or electronic record of data), and to be considered to be source data.

**Selection and Withdrawal of Subjects**

* Subject inclusion criteria.
* Subject exclusion criteria.
* Subject withdrawal criteria (i.e., terminating investigational product treatment/trial treatment) and procedures specifying:

(a) When and how to withdraw subjects from the trial/investigational product treatment

(b) The type and timing of the data to be collected for withdrawn subjects

(c) Whether and how subjects are to be replaced

(d) The follow-up for subjects withdrawn from investigational product treatment/trial treatment.

**Treatment of Subjects:**

* The treatment(s) to be administered, including the name(s) of all the product(s), the dose(s), the dosing schedule(s), the route/mode(s) of administration, and the treatment period(s), including the follow-up period(s) for subjects for each investigational product treatment/trial treatment group/arm of the trial.
* Medication(s)/treatment(s) permitted (including rescue medication) and not permitted before and/or during the trial.
* Procedures for monitoring subject compliance.

**Assessment of Efficacy**

* Specification of the efficacy parameters.
* Methods and timing for assessing, recording, and analyzing efficacy parameters.

**Assessment of Safety**

* Specification of safety parameters.
* The methods and timing for assessing, recording, and analyzing safety parameters.
* Procedures for eliciting reports of and for recording and reporting adverse event and intercurrent illnesses.
* The type and duration of the follow-up of subjects after adverse events.

**Statistics**

* A description of the statistical methods to be employed, including timing of any planned interim analysis(ses).
* The number of subjects planned to be enrolled. In multicenter trials, the numbers of enrolled subjects projected for each trial site should be specified. Reason for choice of sample size, including reflections on (or calculations of) the power of the trial and clinical justification.
* The level of significance to be used.
* Criteria for the termination of the trial.
* Procedure for accounting for missing, unused, and spurious data.
* Procedures for reporting any deviation(s) from the original statistical plan (any deviation(s) from the original statistical plan should be described and justified in protocol and/or in the final report, as appropriate).
* The selection of subjects to be included in the analyses (e.g., all randomized subjects, all dosed subjects, all eligible subjects, evaluable subjects).

**Direct Access to Source Data/Documents** The sponsor should ensure that it is specified in the protocol or other written agreement that the investigator(s)/institution(s) will permit trial-related monitoring, audits, IRB/IEC review, and regulatory inspection(s), providing direct access to source data/documents.

**Quality Control and Quality Assurance**

**Ethics:** Description of ethical considerations relating to the trial.