



Understanding the terminology used in pharmacogenetics

What is this leaflet for?

This leaflet is intended for you as a patient or participant who has been invited to participate in a clinical trial that involves pharmacogenetic testing. It provides information regarding your personal privacy – in particular, the options that are available to protect your identity and to safeguard your genetic information.

A clinical trial is a study of medicinal products in people, whether patients or non-patient volunteers, to discover or verify the effects of such medicines on participants and to establish their safety and efficacy.

Pharmacogenetics is the study of how genetic factors may influence our response to medicines.

Clinical trials including pharmacogenetic testing are not designed to identify whether we have inherited – or may be more prone to – a specific disease. Rather, they are intended to investigate the role of genetic factors in determining how people react to individual drugs so that doctors are able to prescribe the appropriate dose of a medicine to achieve the best results with the least possible side effects.

Trials, usually set up by pharmaceutical companies, are necessary in developing new drugs and serve the wider public interest in expanding our understanding of the alternative treatments available for particular conditions, in particular circumstances. In organising any trial, there is a need to balance each participants' privacy against this wider public interest. Sometimes, for instance, the accuracy of genetic findings can only be confirmed by linking the results to clinical data. This means identifying the person concerned. Various levels of privacy and data protection offer different – and possibly conflicting – benefits for those involved in clinical trials (the same concerns may also apply to other types of genetic study).

Protecting data is important not only to make sure that the results are not used to discriminate against you but also to make sure that you have control over how your sample and the results from it are used.

Pharmacogenetics and Clinical Trials; Protecting your Privacy and Data

During clinical trials new medicines are tested for safety and efficacy and may also involve “pharmacogenetic testing” which is a new technology designed to define, through analysis of the genes contained in the cells of people participating to the trials, whether a particular pharmacogenetic profile is shown to match a response to a specific drugs.

This type of genetic analysis is not aimed at discovering whether an individual is prone to develop specific diseases.

How clinical trials are to be carried out is controlled by various parts of legislation and codes of ethics and practice.

Three of the most important responsibilities to be jointly fulfilled by the sponsors, the ethics committee and the investigators are to:

- give the person taking part in the trial all relevant information so they can make an informed decision on whether to take part or not;
- protect the people involved against any harm; and
- protect the privacy of the people involved.

As far as the first two points are concerned, you keep the right to decide to take part, to refuse or withdraw from a clinical trial, without it affecting the quality of your normal routine medical care.

With regard to protection of your privacy, it is important to remember that pharmacogenetic data are subject to the same level of confidentiality as all other medical information. Moreover additional protection might be provided. In very general terms, the greater the degree of privacy you are given, the lower is the likelihood of linking you to the sample and the genetic results derived therein. In turn, this lowers the later possibility of verifying the meaning, the accuracy and reliability of the overall results generated in the clinical trials in which you have been enrolled.

Therefore, the choice you make should take into account not only your own desire for privacy (this may vary between individuals) but also your wish to know your individual results, the nature of the research, the need to verify the reliability of genetic information and how regulatory authorities that supervise medicinal research or approve drugs, use the results.

How is your sample handled and which are the consequences for your privacy protection?

This paper intends to provide you with some preliminary information on the meaning of terms used to define samples taken for pharmacogenetic testing and data in clinical studies. You will be receiving additional information by the investigator both verbally and in writing within the documents provided to you for your consent to the participation to the clinical trial.

Anonymous samples and results

Your sample on which to carry pharmacogenetic testing, is taken for medical research purposes and there is no link with your identity: samples and data taken are defined as ‘anonymous’. This type of collecting and coding of samples is usually only used for general medical research.

This way of handling samples and genetic data only allows for the link between the genetic results and the clinical record but not to your identity. It gives the highest level of additional privacy protection, but also implies that you might not be able to withdraw your sample from further analyses or receive your individual results from the study.

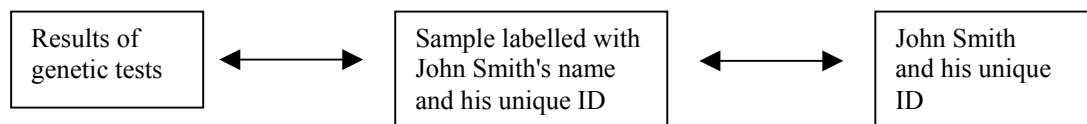
This also has an additional consequence - regulatory authorities in charge of supervising Good Clinical Practices in clinical trials will have no opportunity to check how accurate and reliable the pharmacogenetic results are, as there may be times when they need to check and link a clinical response to a particular participant and his or her genetic profile.

Coded samples

a) Identified samples and results

The sample taken from you will be labelled with your name (for example, Mr John Smith) and other unique ways of identifying you (for example, the hospital records number ABC23DEF).

Your results are directly linked to your identity and there is no extra protection, which will apply on top of the secrecy, which normally applies to medical records.



With this category of coding, it is possible to fully identify which person the pharmacogenetic information relates to. With this level of privacy protection:

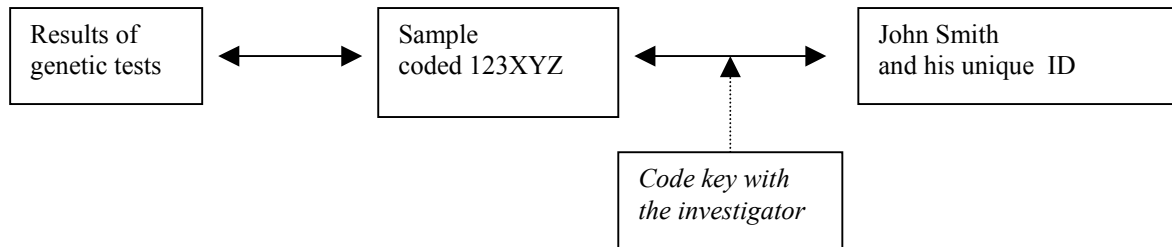
- John Smith can easily ask for feedback about his pharmacogenetic information.
- He can also ask the company to destroy his sample or stop it being used in further analysis.
- If necessary, regulatory authorities can also check the accuracy of the information supporting the claim that a specific pharmacogenetic profile is associated with a certain type of response to a medicine.

b) Single-coded samples and results

Your sample will be labelled with a code (for example, 123XYZ).

Pharmacogenetic results are thereafter derived from the sample labelled 123XYZ.

However, only the investigator knows the identity of the person (in this case, Mr John Smith) to whom this code (and the results of the genetic tests) applies. With this category of coding, there is one specific code that links you to the sample and the results. The investigator usually holds the key to the code.



This key separates your identity from the results of the analysis. Only by breaking the code can you be identified and linked to the results. It is possible for you to withdraw your sample for any further use in the future. You or your doctor may also ask to see the results of the test. If necessary, it is also possible for the investigator, the sponsor and the authorities to check the authenticity of the genetic results and their link to John Smith.

c) Double-coded samples and results

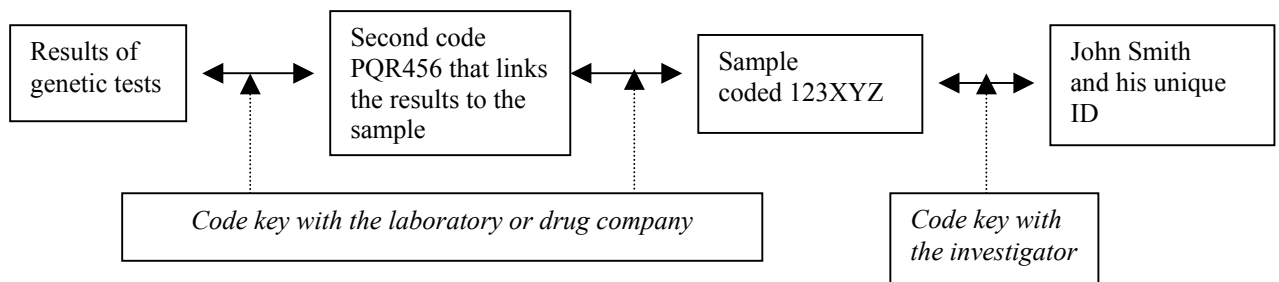
The investigator assigns the code to your sample and only the investigator can link you (John Smith) with the sample (coded 123XYZ). Then a second code (for example, PQR456) is provided to link the already coded sample to the pharmacogenetic results.

The investigator holds the key to the first (sample) code but does not know the second code assigned to the genetic results.

The laboratory or drug company are not aware of the first code but they know the key to the second code.

Unless the two codes are linked, the sample and the results of genetic testing cannot be linked to you.

The key step is the link between the first code 123XYZ (which links the sample to John Smith) and the second code PQR456 (which links pharmacogenetic results with sample coded 123XYZ).



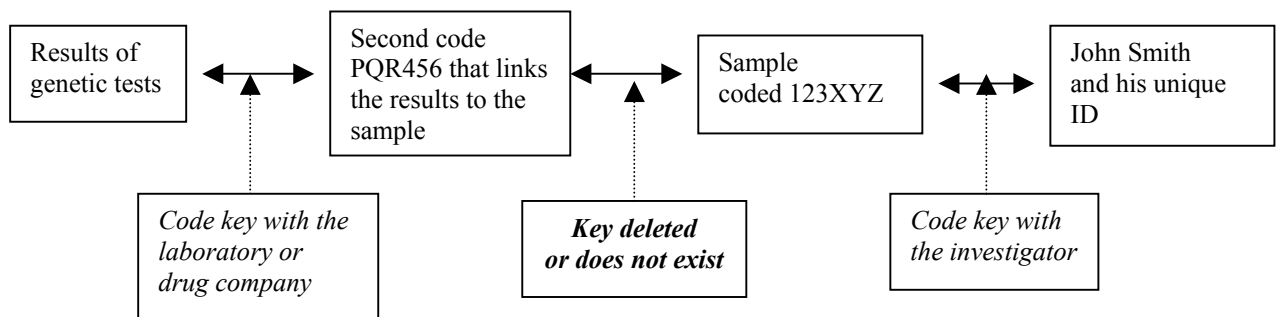
While providing extra privacy, this level of coding provides the same advantages of single-coded samples in terms of:

- the participant and their doctor having access to the results;
- withdrawing the sample from further analysis; or
- regulatory authorities may check the accuracy of the data.

d) Anonymised samples and results

For a set period of time, which is specified and you are informed about, the sample and the results have or had been linked to you using a coding system. The duration of this link will depend on the objectives of the study and may range from a few weeks to years. At the end of the set period of time, the links between you and the results are permanently broken by destroying the codes and the code keys.

Even previously identifiable samples, where the name or identifier is removed, may become anonymous samples (then they are called “anonymised”). After that there is no link whatsoever between yourself and the results or the sample.



Because of this, it is not subsequently possible for you to withdraw the sample from further analyses or to update information for further use. And, it is not possible to give you or your doctor results. There are also no prospects of checking the accuracy of the results of pharmacogenetic tests from the study or gain any extra information related to clinical outcome.

Conclusion

When designing clinical trials, investigators and sponsors of new drugs should try, by consulting regulatory authorities and ethics committees, to find the best balance between achieving the objectives of the medical research, providing useful and usable pharmacogenetic data and putting in place measures adequate to protect the rights of the participant to privacy and to information.

The participant to the clinical trial should be provided - in advance of the finalization of the consent process and in advance of the sample for pharmacogenetic testing to be taken - verbally and in writing from the investigator with adequate information on the importance of your participation in the clinical trial. The participant should be given opportunities to choose whether or not to contribute to the pharmacogenetic testing, without this choice affecting the quality of his/her medical care.