Genomic Sampling and Management of Genomic Data (Draft Guidance)

Creates an international guideline for genomic sampling and the management of genomic data in clinical studies to harmonize standards and enable globally consistent research.

Updated last **July 19, 2016**
for the 12/10/15 draft guidance noticed via the federal register on 6/3/16

WHAT IT DOES

This draft guidance (E18, International Council for Harmonisation of Technical Requirements for Pharmaceuticals for Human Use; noticed via 81 Federal Register 35781) provides recommendations that aim to standardize general principles of genomic sampling and management in clinical research and other studies in the process of drug development. Issues to be considered include the collection, processing, transportation, and storage of genomic samples, as well as the creation, management, and storage of genomic data, with consideration of patient confidentiality, privacy, informed consent, and transparency of findings.

This draft guidance aims to provide standards of genomic sampling and management that minimize analytical variation in genomic data research with the following recommendations:

- *Genomic Sampling*: Establish and record 1) sample collection protocol with consideration of specimen type (e.g. whole blood, tissue, buccal swabs, saliva, bone marrow aspirate, urine, feces), 2) timing of specimen collection, 3) conditions for preserving the specimen, 4) appropriate handling protocol with consideration of the specimen stability and degradation, 5) optimal volume of specimen needed for downstream genetic studies, 6) validated extraction procedures, and 7) identification of substances that may interfere with the genomic tests. To ensure the quality of the genomic analysis, sponsors and researchers should also establish and detail appropriate transport and storage of extracted genomic samples.
- *Genomic Data*: Determine and record 1) the appropriate method for data generation, 2) validation of intended method, 3) annotation platform and bioinformatic algorithms to be used, and 4) long-term storage method.
- *Privacy and Confidentiality*: Specify coding techniques and controlled access to genomic samples and data that protects confidentiality of subjects' data. Anonymization is not recommended because it eliminates the ability to link genomic data to subjects' observable health characteristics.
- *Transparency and Communication of Findings*: Establish a position regarding the return of findings to subjects and their primary healthcare providers and determine exactly what information will be communicated regarding intended and incidental research findings.
- *Informed Consent*: Establish and document a globally acceptable informed consent for genomic sampling with special consideration given to 1) local regulations for genomic sampling and 2) subjects who enroll in the study with consent provided by legal representatives or guardians. Ideally, permission would allow for broad analysis and sample use across time.

RELEVANT SCIENCE

Genomic sampling has been increasingly important in identifying the risks and benefits of drug responses during clinical research. Genomic data serves to facilitate disease understanding, mechanisms of biochemical interaction through which a drug produces its effect (drug pharmacology), identification of biological markers, and identification of new drug targets. This information is valuable to 1) optimize patient therapy and 2) design more efficient clinical studies in the future.

Genomic research involves the sequencing of nucleic acids, including DNA and RNA, for analysis of gene expression and regulation, and detection of epigenetic modifications. These tests yield information regarding how genes are expressed and how they may function in a disease setting or in response to drug therapy. Analysis of DNA and RNA requires stringent methods for transportation,

storage and handling. DNA is about 100 times more stable than RNA; due to this difference, strict measures must be made to appropriately store and handle RNA during clinical studies, thus preventing inaccurate interpretation of data generated.

The genomic data derived from these experiments requires modes of transportation, storage, and maintenance, especially in the form of publicly available databases to prevent redundancy. This data guidance serves to standardize the methods involved in sampling and managing this genomic data to decrease variability between clinical studies conducted in different labs and provide more reliable analysis and interpretation of clinical research.

ENDORSEMENTS & OPPOSITION

Endorsements:

- On June 5, 2014, the International Council for Harmonization (ICH) Steering Committee endorsed the need for harmonized genomic sample guidance in a final concept paper:

"Genomic data have become important to evaluate efficacy and safety of a drug for regulatory approval. As a result, genomic information has been increasingly included in drug label relevant for the benefit/risk evaluation of a drug. To accumulate such data during drug development and throughout the product life cycle, genomic samples should be collected in clinical trials and other studies following a certain methodology and be stored for certain periods. It has been reported that collection rate of such samples is still low in many ICH regions" ... "There is currently no harmonised ICH Guideline on genomic samples collection in clinical trials or other studies. Harmonisation across regions on this topic will maximize the information gathered from the studies for e.g., sample collection and analysis (including ethical considerations) and facilitate implementation of pharmacogenomics for the benefit of all stakeholders. On the contrary, lack of harmonisation could delay such implementation affecting drug development, healthcare delivery with consequent impact on the sponsors, patients and public."

Opposition:

- At present, there has not been publicly reported opposition to this draft guidance.

STATUS

The International Council of Harmonization (ICH), of which the U.S. Food and Drug Administration (FDA) is a founding member, aims to promote international harmonization of regulatory requirements in the pharmaceutical industry, by considering both regulatory and industry input. ICH aims to reduce redundant experimentation and development, streamline the research and development process, and increase the efficiency of drug development. More specifically, ICH is concerned with harmonization of technical requirements for the registration of pharmaceutical products for human use among regulators around the world.

This ICH Efficacy Expert Working Group released this draft guidance for public consultation on December, 10, 2015; the FDA noticed the opportunity for public comment on June 3, 2016. After the consultation period closes on August 2, 2016, the FDA and the Efficacy Expert Working Group will review submissions. After the public consultation period concludes for all ICH members, the ICH will create a final guideline once member consensus is achieved.

RELATED POLICIES

There are not any related governmental actions at this time.

POLICY HISTORY

There are no previous versions of this regulation nor have there been any previously established international guidelines pertaining to genomic sampling in clinical research for drug development.

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RECOMMENDED CITATION

Duke SciPol, "*Genomic Sampling and Management of Genomic Data*" available at http://104.131.176.85/node/71 (7/19/2016).