The Management of Electronic data

Martin M-T Fuh MD, DMSci.

While the ICH E6 guidelines regarding the clinical trial data apply to both paper and electronic data, the U.S. Code of Federal Regulation (CFR) contains regulations specific to electronic records. These can be found in 21 CFR 11 – Electronic Records and Electronic Signatures. These regulations establish the criteria under which the U.S. Food and Drug Administration (FDA) will accept the electronic records and signatures as trustworthy, reliable and generally equivalent to paper records and handwritten signatures executed on paper. The following list summarizes some of the requirements outlined in the regulations.

1. The software used for the system must be validated. That is its accuracy, reliability, and ability to detect invalid or altered records must have been tested and established.

2. It must be possible to generate accurate, legible copies of the electronic records, suitable for TFDA to inspect, copy, and review.

3. The records must be protected throughout the required retention period, available for accurate and ready retrieval, even if the software that created those records is no longer used.

4. Access to the system that contains those records must be reliably limited to authorized individuals only.

5. Personnel who develop, maintain, and use these records must have documented education, training, and experience appropriate for their roles.

6. Every electronic record must have a secure, computer-generated date- and time-stamped audit trail, maintained for as long as the underlying e-record, and also be available to the TFDA for review and copying. Record changes must not obscure previously recorded data.

7. Reliable change control procedures, with their own time-sequenced audit trails, must in place.

8. Written policies must exist, establishing that the record producer recognizes that anyone using an electronic signature is responsible and accountable, just as would be the case for handwritten signature. Accompanying the signature in clear text must be the printed name of the signer, the date and time when the signature was executed, and meaning of the signature (e.g., review, approval, responsibility, authorship). The system must prevent the signature from being removed, copied, or repudiated by the signer.

9. Strict requirement for passwords and other security measures must be implemented to prevent to access to and falsification of e-records.
Site Responsibilities Regarding Clinical Data

From the time that data are generated until the time of data analysis, everyone who handles the data must follow certain steps to ensure the accuracy and credibility of the data, leaving an “audit trail” that indicates how data moved from one location to another, how and when any changes were made and by whom, all the while maintaining the confidentiality of subjects. It is therefore important that data are stored and handled appropriately, following regulations and GCP guidelines, so that the credibility and accuracy of the data will not be questioned.

To fulfill regulatory requirements, the principle investigator (PI) and clinical research coordinator (CRC) have many activities to complete when handling clinical data. These include: 1) recording the data in source documents, 2) completing data forms, 3) correcting the data, 4) submitting the data, and 5) storing the data for long-term retention.

Depending on a number of factors, including the type of monitoring, the amount of monitoring for source document verification, and whether paper or electronic data forms are being used, the order of these activities may vary. For example, clinical data on paper data forms may first be collected from the investigative site by a monitor or clinical research associate (CRA) for source document verification, transferred to data processors for data entry and computerized checks, and then submitted to statisticians for analysis and reporting. When electronic data forms are used, computerized checks may occur before source document verification; monitoring may also occur after data entry and computerized checks have been completed. The data will be returned to the investigative site when data confirmation or correction is needed, or when questions about the data are generated by the statistical review. P287

Record the data in source documents

Source data are defined as all information in original records and certified copies of original records of clinical findings, observations, or other activities in a clinical trial is necessary for the reconstruction and evaluation of the trial. Source data are contained in source documents (original records or certified copies). [ICH E6: Good Clinical Practice: Consolidated Guideline 1.51]

Source documents are the original records where subject information is first recorded. Source documents are typically signed and dated by the person completing them and may include, but are not limited to:

1. All components of inpatient hospital or outpatient clinical records
2. Consultation reports
3. Procedure and laboratory reports
4. Pharmacy records
5. Transport records, including ground and air transportation
6. Source data forms created to record pertinent data
7. Subject diaries
8. X-rays and film reports

There are several key points regarding the recording of data in source documents:
1. Data recorded in source documents should be thorough and complete
2. Data recorded in source documents should be accurate and consistent
3. Entries written in source documents should be made at the time of observation and treatment

*To be continued in the next time…*