Elements of Information Management

A unique identifier is an important tool for managing information, and careful thought should be given for how best to assign identifiers to patients and samples within the information management system.

**Patient identifiers**—Sometimes hospitalized patients are assigned a unique identifier upon admission, to be used for the duration of the hospital stay. A patient may get a new number each time he/she is seen or admitted. In other settings, the unique identifier may be assigned to the patient on a more permanent basis, to be used each time the patient has any health care.

**Sample identifiers**—Labs need to assign unique identifiers to patient samples so they can be tracked throughout the laboratory.

The method for generating and assigning unique identifiers within an information management system will depend on many factors. Some commercially available computer systems for labs have a numbering system built in to the software. Labs using paper-based systems will need to establish their own system.

An example of a simple system for generating unique identifiers is as follows.

Consider using a number consisting of the year, the month, the day, and a four digit number: YYMMDDXXXX. At the beginning of each day, the last four digits start with the number 0001.

For example, the number 0905130047 can be read 04 05 13 0047, and it would represent: sample #47, received on May 13, 2009.

To avoid confusion or mix-up of samples use the sample’s full identifying number throughout the laboratory. At a minimum, the unique number will need to be used on all aliquots of the sample, on the request form, the laboratory register or log, and the result sheet.

Whatever system a laboratory chooses, unique identifiers should be used to eliminate confusion and mix-up of samples, and make samples and information easier to find.

Test request forms, logs, and worksheets

The test request form is where the entire testing process begins, and is important for both paper and electronic systems. To optimize test requests:

- standardize the test form—the form should indicate all information that
needs to be provided when ordering and submitting a test request, and sufficient space for recording the information; (ISO 15189 requirements for the request form are addressed in Module 16, Documents and Records);

- ensure the request form is completed—when the request form is incomplete, communicate with the requestor to try to secure the needed information. It may become necessary to refuse non-urgent test examination until the form is completed.

Logs that allow for recording data at the time of arrival of the sample in the laboratory are very important, as are worksheets that document which patient samples are being tested during a given procedure. In a paper-based system, this will be a written record, usually in a bound book. For an electronic system, logs and worksheets may be generated from the computer. Thought should be given as to what information should be recorded.

There are certain points in data handling where it is easy for errors to occur, such as manual transfer of patient data from requisition forms to logs, keyboard electronic entry of data into a computerized information system, or transcription from worksheets to reports. The laboratory should put processes in place to safeguard against errors at these points. Sometimes, it may be necessary to adopt formal checking processes to ensure the accuracy of data recording and transmission of handwritten or keyed information. One example of simple checking processes is to always have two people review data transcription to verify its accuracy. Some computerized systems have electronic checks requiring duplicate entry of data that are built into the system. If these duplicate entries do not match, an error alert is generated to the person entering the data.

Security

It is important to establish a means to protect against loss of data. For paper-based systems, this will involve using safe materials for recording and storing the records properly. For computerized systems, scheduled or regular backup processes become very important.

It is of utmost importance to safeguard a patient’s privacy, and, in this regard, security measures must be taken to protect the confidentiality of laboratory data. Laboratory directors are responsible for putting policies and procedures in place to assure confidentiality of patient information is protected.

Reporting systems

The product of a laboratory is the test result, or the report. Give sufficient attention to the reporting mechanism to ensure that it is timely, accurate, legible, and easily understood.

The report should provide all information needed by the health care provider or the public health official using the data, and include any comments that are appropriate, such as “sample haemolyzed” or “repeat sample.” It should be verified and signed by the appropriate laboratory staff.

Whether issuing paper-based or computer-based test reports, laboratories must assure reports arrive on time to the right person. Reports might be delivered by laboratory staff to the hospital ward, by courier or by mail to an off-site facility, or through electronic mechanisms using a sophisticated LIMS. A telephone is often used to give urgent results. A record of the telephone call must be kept and should
include the caller’s signature, date and time, and whenever possible, the recipient’s name. Telephone results should be followed by a written report.

The test result report reflects the laboratory’s image to the client, the test requestor, and to others who may use or need it.

**Communication considerations**

When planning for paper-based or computer-based information systems, be sure to consider the need for a good system for communicating within and external to the laboratory. This is especially important in larger organizations. It may be necessary to devise a system for passing along information between staff covering different shifts or areas of the laboratory to make sure important details are not overlooked. The laboratory might also need to develop a policy for communicating with its customers, such as health care providers, central reference laboratories, and official agencies. The policy should describe what communication channels need to be followed, and when, and state who has authority to communicate with the different levels of customers.

**Common problems**

There are many points where problems can occur when managing laboratory information. The laboratory should carefully consider potential problems and plan on how to avoid them. Some of the most common problems are:

- incomplete data for test interpretation, or insufficient or illegible identification. Systems should be designed to minimize this occurrence; for example, when using electronic systems, it is possible to design fields so that if information is missing, data entry cannot be completed;

- forms that are inadequately designed to meet laboratory and client needs;

- standardized forms prepared by others may not be suitable for all laboratories;

- inability to retrieve data due to poor archiving processes or insufficient back-up of computerized information;

- poor data organization, which may hinder later data analysis efforts to meet research or other needs;

- incompatibility between computerized information systems and equipment or other electronic systems, resulting in problems with data transmission.

Source: WHO/CDC/CLSI Laboratory Quality Management System – Training Toolkit