Medical Laboratory

NTQF Level III

Learning Guide 26

Unit of Competence: Collect and Process Medical Samples

Module Title: Collect and Process Medical Samples

LG Code: HLT MLT3 LO5-LG26

TTLM Code: HLT MLT3TTLM 0919v1

LO5. Receive and log sample

Learning Instructions:

1. Read the specific objectives of this Learning Guide.
2. Follow the instructions described in number 5 to 11.
3. Read the information written in all Information Sheets. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
4. Accomplish all Self-check according to learning session separately
5. Ask from your teacher the key to correction (key answers) or you can request your teacher to correct your work. (You are to get the key answer only after you finished answering the Self-checks).
6. If you earned a satisfactory evaluation proceed to next Information Sheet. However, if your rating is unsatisfactory, see your teacher for further instructions or go back to pervious Learning Activity.
7. Submit your accomplished Self-check. This will form part of your training portfolio.
8. Try to understand what are being discussed. Ask you teacher for assistance if you have hard time understanding them.
9. Accomplish the all Self-checks.
10. After you accomplish self check proceed to operation sheet if available.
11. If you perform operation procedure correctly proceeds to LAP. test if available

Learning out comes (objectives): At the end of this module the trainee will be able to:-

- Confirm the number and nature of received *samples/items*
- Check and matching Samples with request forms before accepted
- Complete the Required documentation at handling point
- Record Date and time of samples arrival
- Enter Samples into the Laboratory Information Management System (LIMS)./log sheet
- Apply Required document tracking mechanisms
- Process 'Urgent' test requests according to enterprise requirement
- Ensuring the Security and traceability of all information, laboratory data and records
- Check pre-use and cleanliness of all items.

Information sheet-1	Confirm the number and nature of received *samples/items*

5.1. Confirm the number and nature of received *samples/items*

The first step in the process of obtaining the sample is the request for testing. The laboratory must make available a test request form that specifies all the information that will be needed for proper handling and reporting.

- Essential information for the test request form includes:

- ✓ Patient identification;
- ✓ Tests requested;
- ✓ Time and date of the sample collection;
- ✓ Source of the sample, when appropriate;
- ✓ Clinical data, when indicated;
- ✓ Contact information for the health care provider requesting the test.

Collection of samples in the field for epidemiological studies should be accompanied by a form that includes the patient's name, a unique identification number, demographic information, and the patient's health status. The additional information is necessary to assist in identifying the source of an infection, and finding potential contacts

Information sheet-2	Record Date and time of samples arrival

5.2. Record Date and time of samples arrival

- Sample register or Log

The laboratory should keep a register (log) of all incoming samples. A master register may be kept, or each specialty laboratory may keep its own sample register. Assign the sample a laboratory identification number write the number on the sample and the requisition form. If computers are used for reports, enter the information into the computer.

- The register should include:
- ✓ Date and time of collection
- ✓ Tests to be performed.
- ✓ Date and time the sample was received in the laboratory
- ✓ Sample type
- ✓ Patient name and demographics, as required
- ✓ Laboratory assigned identification (e.g. number 276_01_09_2019)

The laboratory needs a system to allow for tracking a sample throughout the laboratory from the time it is received until results are reported. This can be done manually by careful keeping of records as follows. Confirm receipt of samples and include date and time. Label samples appropriately and keep with the test requisition until laboratory identification is assigned. Track aliquots they should be traceable to the original sample. If computers are available, maintain a database for tracking. The following information about each sample should be entered into the database:

Identification number

- Patient information
- ✓ Collection date and time

- ✓ Type of sample (e.g. urine, throat, cerebrospinal fluid for culture)
- ✓ Tests to be performed
- ✓ Name of ordering physician (or other health care provider)
- ✓ Location of patient (e.g. ward, clinic, outpatient)
- ✓ Diagnostic test results
- ✓ Time and date results are reported.

Information sheet-3	Entering Samples into the Laboratory Information Management System (LIMS)./log sheet

5.3. Enter Samples into the Laboratory Information Management System (LIMS)./log sheet
Register or log

The laboratory should keep a register (log) of all incoming samples. A master register may be kept, or each specialty laboratory may keep its own sample register.
Assign the sample a laboratory identification number – write the number on the sample and the requisition form. If computers are used for reports, enter the information into the computer.

- The register should include:
  - ✓ Date and time of collection;
  - ✓ Date and time the sample was received in laboratory;
  - ✓ Sample type;
  - ✓ Patient name and demographics, as required;
  - ✓ Laboratory assigned identification (e.g., number 276_01_09_2019);
  - ✓ Tests to be performed.

Information sheet-4	Applying Required document tracking mechanisms

5.4. Apply Required document tracking mechanisms
5.4.1. Tracking system

The laboratory needs a system to allow for tracking a sample throughout the laboratory from the time it is received until results are reported.
This can be done manually by careful keeping of records.

- Confirm receipt of samples, include date and time;
- Label samples appropriately; keep with the test requisition until laboratory ID is assigned;
- Track aliquots–traceable to the original sample.

If computers are available, maintain a database for tracking. The following information about each sample should be entered into the database:

- Identification number;
- Patient information;
- Collection date and time;
- Type of sample: for example, urine, throat, cerebrospinal fluid for culture;
- Tests to be performed;
- Name of ordering physician (or other health care provider);
- Location of patient, such as ward, clinic, outpatient;
- Diagnostic test results;
- Time and date results are reported

Information sheet-5	Process 'Urgent' test requests according to enterprise requirement

5.5. Process 'Urgent' test requests according to enterprise requirement

5.5.1. Emergency (STAT) Services and Tests

Specified STAT services are available at all times. STAT laboratory tests and services are those that are needed immediately in order to manage medical emergencies. STAT test requests are given the highest priority by the Clinical Laboratory for processing, analysis and reporting. If less urgent tests are also ordered STAT, a backlog may develop and each specimen will be processed in order of receipt, thereby delaying the reports for true emergencies. A CRITICAL laboratory test is a test that is vital to patient management, requiring adherence to a defined rapid turnaround time from test ordering to results reporting. Results are reported to a responsible, licensed care giver. A critical laboratory test is distinguished from a CRITICAL VALUE or CRITICAL RESULT, which is defined as a test result that exceeds reference limits to an extreme degree that may indicate a life-threatening condition.

- Each test on the requisition and the biohazard bag containing the specimen must be marked “STAT.” In unusually critical circumstances, it is best to hand deliver the specimen to the laboratory.
- STAT specimens and specimens collected when regular messenger service is unavailable must be delivered by a ward employee, physician or special messenger.
- In order to ensure STAT processing, STAT specimens must be delivered to the STAT window. The Laboratory cannot guarantee STAT processing for STAT specimens dropped off at the ROUTINE window.

- STAT results will be telephoned to any patient-care unit lacking a computer terminal. A written record of test results telephoned to patient care areas must be made by the physician, nurse or other individual who receives the report. “Read-back” (with confirmation) of all critical results (including both stat and critical values) reported verbally or by telephone is required to verify values and assure accuracy, in accordance with Joint Commission’s *National Patient Safety Goals*.
- LabCorp defines critical values (or panic values) as laboratory test results that exceed established limit(s) (high or low) as defined by the laboratory for certain analytes as listed in the Critical (Panic) Limits. Critical results are considered life-threatening and require immediate notification of the physician, the physician's representative, the ordering entity, or other clinical personnel responsible for the patient's care.
- Note: Abnormal results are not considered critical values. Results that are outside the laboratory's established reference intervals may be considered abnormal, but the terms "abnormal" and "critical" should not be used interchangeably

Information sheet-6	Ensuring the Security and traceability of all information, laboratory data and records

5.6. Ensuring the Security and traceability of all information, laboratory data and records

5.6.1. 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 ensure

Confidentiality of patient information is protected.

5.6.2. Data traceability

Information management is a system that incorporates all the processes needed for effectively managing data—both incoming and outgoing patient information. The information management system may be entirely paper-based, computer-based, or a combination of both. Whatever technology is employed, information management is another of the essentials of a quality system, and is closely related to documents and records.

Remember that data, and in particular test results, are the final product of the laboratory. Laboratory directors need to ensure that the laboratory has an effective information management system in place in order to achieve accessibility, accuracy, timeliness, security, confidentiality and privacy of patient information.

When planning and developing an information management system, whether it is a manual, paper-based system, or an electronic system, there are some important elements to consider:

Important Elements

- Unique identifiers for patients and samples.
- Standardized test request forms (requisitions)
- Logs and worksheets
- Checking processes to assure accuracy of data recording and transmission
- Protection against loss of data
- Protection of patient confidentiality and privacy
- Effective reporting systems
- Effective and timely communication.

5.6.3. Laboratory Data and Records

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 during 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 a simple checking process is to always have two people review data transcription to verify its accuracy. Some computerized systems have electronic checks built into the system that require duplicate entry of data. If these duplicate entries do not match, an error alert is generated to the person entering the data.

Information sheet-7	Check pre-use and cleanliness of all items.

5.7. Check pre-use and cleanliness of all items.

5.7.1. Cleaning and disinfecting work area and equipment after use

Laboratory work area and equipment should make free of contamination to minimize hazards of:

- handling
- collecting,
- Transporting
- Disposing of left over samples and unnecessary other biological materials
- Minimize hazard effect to the environment.

All left over samples and unnecessary other biological materials shall be discarded in a containers specifically designed, planned and marked for disposal of hazard wastes. Biological waste containers should not fill beyond their designed capacity. Sharps including needle, lancets, scalpels, glass and metals discarded directly to the puncture resistance containers. Rubbish and other laboratory wastes shall not allow accumulate. Filled containers shall be removed on a regular base from work area. They shall be held in a designated secure place, normally with in the laboratory area, prior to decontamination or disposal.

- Cleaning - It is a process which removes visible contamination but does not necessarily destroy microorganisms. It is necessary prerequisite for effective disinfection or sterilization. . It is accomplished manually or mechanically using water with detergents or enzymatic products. Thorough cleaning is essential before high-level disinfection and sterilization because - Inorganic and organic materials that remain on the surfaces of instruments interfere with the effectiveness of these processes.

- If soiled materials dry or roast onto the instruments, the removal process becomes more difficult and the disinfection or sterilization process less effective or ineffective. Instruments should be presoaked or rinsed to prevent drying of blood and to soften or remove blood from the instruments.
Cleaning is performed manually and mechanically to remove visible or non-visible contamination. The two essential components of manual cleaning are friction and fluidics:

- Friction(e.g., rubbing/scrubbing the dirty area with a brush)
- Fluidics (i.e., fluids under pressure) is used to remove debris from internal channels after brushing and when the design does not allow passage of a brush through a channel

The most common types of mechanical or automatic cleaners are ultrasonic cleaners, washer decontaminators, washer-disinfectors, and washer-sterilizers.

- Ultrasonic cleaning removes contamination by cavitations and implosion in which waves of acoustic energy are propagated in aqueous solutions to disrupt the bonds that hold particulate matter to surfaces
- Washer-decontaminators/disinfectors act like a dishwasher that uses a combination of water circulation and detergents to remove debris
- Washer-disinfectors are generally computer-controlled units for cleaning, disinfecting, and drying solid and hollow surgical and medical equipment
- Washer-sterilizers are modified steam sterilizers that clean by filling the chamber with water and detergent through which steam passes to provide agitation

DISINFECTION: it is a process of decontamination or removal of pathogenic microorganisms from objects, so they are safe to handle, use, or discard. To prevent cross- contamination, maintaining aseptic transportation, storage and discarding of specimen and materials is very critical and important.

Self-Check 1	Written Test

Answer the Following Questions (2 point each):

1. Sample register or Log includes the following except.

A. Date and time of collection

B. Date and time the sample was received in laboratory

C. Patient name and demographics, as required

D. All .

2. What is/are not important elements to consider when planning and developing an information management system?

   A. Protection against loss of data
   B. Protection of patient confidentiality and privacy
   C. Effective reporting systems
   D. none

3. What are the two essential components of manual cleaning?

   _____

   _____

4. _____is a process which removes visible contamination but does not necessarily destroy microorganisms.

5. _____is Laboratory tests and services that are needed immediately in order to manage medical emergencies.

   A. STAT
   B. Emergency
   C. A and B
   D. None

Note: **Satisfactory rating - 10 points Unsatisfactory - below 10 points**

You can ask you teacher for the copy of the correct answers

Answer Sheet

Score _____

Rating _____

Name: _____ Date: _____

Short Answer Question

1._____

2._____

3._____,_____,_____,_____,_____

4._____

5._____

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