BENCH MARKING COURSE (BM)

Introduction

This course focuses on the general laboratory operation focusing on how these operations are managed

Goal:

To strengthen participant capacity in general laboratory operation management

EXTERNAL QUALITY ASSURANCE (EQA)

Introduction

To provide participants with the basics of external quality assessment

Goal:

To strengthen participant capacity in EQA activities

GENEXPERT ASSAY (GX)

Introduction

Genotypic tests were developed to fill the void for more rapid and accurate diagnostic tool in TB diagnosis.
Clinicians require rapid DST results to be promptly triage the patients into the appropriate regimens.
Lab staff are therefore required to ensure that their staff are proficient in performing these rapid genotypic tests

Goal:

To strengthen the competencies of laboratory personnel to perform Genexpert technique according to the approved WHO standards.

GENEXPERT PROFICIENCY TESTING (GXPT)

Introduction

Genexpert PT is an EQA program involving sending a panel of sample to a group of participating labs as a means of verifying the reliability of GeneXpert lab results. Assess proficiency of the labs in preforming GeneXpert assay

Goal:

To develop and strengthen participant capacity in preparation of GeneXpert PT materials

Objectives: By the end of this course participants should be able to: • To fully understand the general laboratory management of a TB laboratory • To appreciate all aspects of biosafety in a TB culture lab • Appreciate the laboratory quality management system • Understand the laboratory management system, EQA operations and the NTRL/SRL PT scheme	**Objectives:** By the end of this course participants should be able to: • understand the principles and appreciate the concept of blinded rechecking • appreciate and understand how to carry out on-site supervision	**Objectives:** By the end of this course participants should be able to: • Understand the applicability of the Genexpert technique. • Apply the appropriate safety precautions in the molecular laboratory • Correctly perform Xpert MTB/RIF technique • Employ use of quality control during analysis of Genexpert technique. • Correctly interpret Genexpert results	**Objectives:** By the end of this course participants should be able to: • Understand the need for evaluation of Lab competence in GeneXpert testing • Learn how to prepare, package and ship GeneXpert PT materials • Learn how to analyse GeneXpert PT data
Target group: Laboratory managers or laboratory heads	**Target group:** laboratory staff involved in EQA, Laboratory managers, EQA managers	**Target group:** Laboratory personnel who is currently involved or is proposed to perform the GeneXpert technique.	**Target group:** Laboratory personnel who is currently involved or is proposed to prepare GeneXpert PT materials.
Training methodology • Lecture • discussions • Demonstrations	**Training methodology** • Lecture • Demonstrations • discussions • exercises	**Training methodology** • Lecture • Demonstrations • discussions • Exercises • Practical hands on	**Training methodology** • Lecture • Demonstrations • discussions • Exercises • Practical hands on

Training outcome Learners will gain capacity in general laboratory management focusing on the key areas and compare with their systems. **Dates** **Credit units:** **Duration: 5 days** **Language: English**	**Training outcome** Learners will understand EQA in general and be able to demonstrate, integrate, and apply the acquired information into their systems. **Dates** **Credit units: 5** **Duration: 10 days** **Language: English**	**Training outcome** Learners will understand and implement the GeneXpert technique. **Dates** **Credit units: 4** **Duration: 10 days** **Language: English**	**Training outcome** Learners will gain and demostrate technical competency in preparation, packaging, shipping and analyzing of GeneXpert PT materials. **Dates** **Credit units: 5** **Duration: 10 days** **Language: English**

Microscopy (MS)	**Microscopy Proficiency Testing (MSPT)**	**Lowenstein-Jensen Culture (LJ)**	**Lowenstein-Jensen Drug Susceptibility Testing (LJDST)**
Introduction AFB microscopy is a highly accurate, reliable, inexpensive and fast diagnostic method that requires minimal infrastructure and equipment. It is the most accessible TB diagnostic method. **Goal:** To strengthen the competencies of laboratory personnel to perform microscopy technique according to the approved standards.	**Introduction** Microscopy PT is an EQA program involving sending a panel of sample to a group of participating labs as a means of verifying the reliability of Microscopy lab results **Goal:** To develop and strengthen the competencies of laboratory personnel to perform microscopy PT technique according to the approved standards.	**Introduction** Lowenstein Jensen media is a glycerated egg-based medium selective in nature used for the cultivation and isolation of Mycobacterium species. Inoculation of both solid and liquid media are considered the "Gold Standard" for TB culture LJ Supports growth of most mycobacteria Growth can be quantified Colony morphology and pigmentation can be seen **Goal:** To develop and strengthen participant capacity in carrying out LJ culture materials	**Introduction** **Multi drug resistance(MDR);** Resistance to the two major first line drugs **Rifampicin** and **Isoniazid** **Extensive drug resistance(XDR):** Resistance to both major first line drugs: **Isoniazid** and **rifampicin**(MDR) Resistance to any **fluroquinolone** and to at least one **injectable**.Often untreatable **Goal** To develop and strengthen the competencies of laboratory personnel to perform LJ DST technique according to the approved standards.

Objectives:

By the end of this course participants should be able to:

- Understand the safety precautions involved in microscopy
- Prepare microscopy reagents
- Make good smears and properly stain them
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Target group:

Laboratory personnel who is currently involved or is proposed to perform microscopy assay.

Objectives:

By the end of this course participants should be able to:

- Understand the need for evaluation of Lab competence in Microscopy testing
- Learn how to prepare, package and ship Microscopy PT materials
- Learn how to analyse Microscopy PT data

Target group:

Laboratory personnel who is currently involved or is proposed to prepare microscopy PT materials.

Objectives:

By the end of this course participants should be able to:

- Process sputum samples using the NAOH-NALC method
- Prepare decontamination reagents and LJ media
- read and report LJ culture results
- store LJ culture positive isolatess

Target group:

Laboratory personnel who is currently involved or is proposed to perform the LJ culture technique.

Objectives:

By the end of this course participants should be able to:

- Understand the basic definitions of drug resistance in TB and how drug resistance develops.
- Learn how to prepare drug containing LJ media
- Learn how to set LJ DST
- Understand how to interpret and report LJ DST results
- Troubleshoot LJ DST results

Target group:

Laboratory personnel who is currently involved or is proposed to perform LJ DST

Training methodology • Lecture • Demonstrations • discussions • Exercises • Practical hands on **Training outcome** Learners will gain and demonstrate technical competency in preparation of ZN and FM staining reagents, staining and reading smears. **Dates:** **Credit units: 5** **Duration: 10 days** **Language: English**	**Training methodology** • Lecture • Demonstrations • discussions • Exercises • Practical hands on **Training outcome** Learners will gain technical competency in preparation, packaging, shipping and analyzing of Microscopy PT materials. **Dates:** **Credit units: 4** **Duration: 10 days** **Language: English**	**Training methodology** • Lecture • Demonstrations • discussions • Exercises • Practical hands on **Training outcome** Learners will gain technical competency in reading, interpretation and storage of LJ positive samples.. **Dates:** **Credit units: 5** **Duration: 10 days** **Language: English**	**Training methodology** • Theory sessions • Practical sessions **Training outcome** Learners will gain technical competency in preparation of LJ drug containing media, setting LJ DST, reporting, interpreting and troubleshooting LJ DST result **Dates** **Credit units: 5** **Duration: 10 days** **Language: English**

Mycobacterium Growth Indicator Tube (Mgit) Culture (MG) **Introduction** The BACTEC™ MGIT™960 liquid culture system is based on fluorescence detection of mycobacterial growth in clinical samples other than blood. The MGIT 7ml tubes contain modified middle brook 7H9 broth and a fluorescent sensor at the	**Mycobacterium Growth Indicator Tube (Mgit) Drug Susceptibility Testing (MGDST)** **Introduction** **Multi drug resistance(MDR);** Resistance to the two major first line drugs **Rifampicin** and **Isoniazid** **Extensive drug resistance(XDR):** Resistance to both major first line drugs: **Isoniazid** and	**LINE PROBE ASSAY (LPA)** **Introduction** **LPA** is genotyipicDrug susceptibility testing assay based on DNA STRIP®Technology or DNA line probe assay (LIPA). It is Molecular genetic assay for identification of TB presence, Multi drug resistant TB (MDR-TB) and	**Laboratory Quality Management System (LQMS)** **Introduction** LQMS consists of Coordinated activities to plan, direct, and control an organization with regard to quality.All aspects of the laboratory operation need to be addressed to assure quality; this constitutes a quality management system. **Goal**

bottom which responds to the concentration of oxygen. Inoculation of both solid and liquid media are considered the "Gold Standard" for TB culture **Goal:** To strengthen the competencies of laboratory personnel to perform MGIT culture technique according to the approved standards.  **Objectives:**	**rifampicin**(MDR) Resistance to any **fluroquinolone** and to at least one **injectable**.Often untreatable **Goal:** To develop and strengthen participant capacity in preparation of MGIT DST  **Objectives:**	Extensively drug resistance TB (XDR-TB). In May 2016 the WHO issued a recommendation on the use of the short-treatment regimen (STR) for multi drug resistant TB (MDR-TB). New and rapid diagnostics with focus on second line LPA is key in this intervention. New drug containing regimens are also being introduced for management of drug resistant TB. Clinicians require rapid DST results to be promptly triage the patients into the appropriate regimens. **Goal:** To develop and strengthen participant capacity in performing first and second line LPA assay.  **Objectives:**	To develop and strengthen the competencies of laboratory personnel in LQMS.  **Objectives:**

By the end of this course participants should be able to: • Process sputum samples using the NAOH-NALC method • Unload and report MGIT culture results • store MGIT culture positive isolates	By the end of this course participants should be able to: • Understand the basic definitions of drug resistance in TB and how drug resistance develops. • Learn how to set MGIT DST • Understand how to interprete and report MGIT DST results • Troubleshoot MGIT DST results	By the end of this course participants should be able to: • Understand the molecular biology concepts • Apply the appropriate safety precautions in the molecular laboratory • Correctly perform First and Second Line Probe Assay technique • Employ use of quality control during analysis • Correctly interpret first and second line LPA tests results • Trouble shoot 1ST and 2nd line LPA tests results, procedure and equipment.	By the end of this course participants should be able to: • Define quality • Be conversant with all the twelve quality system essentials • Appreciate LQMS and why it is important to the laboratory
Target group: Laboratory personnel who is currently involved or is proposed to perform MGIT culture.	**Target group:** Laboratory personnel who is currently involved or is proposed to perform MGIT DST.	**Target group:** Laboratory personnel who is currently involved or is proposed to perform the First and Second line LPA.	**Target group:** • Laboratory technical personnel • Quality managers • Laboratory managers
Training methodology During this training course, the following adult learning methods will be applied:	**Training methodology** During this training course, the following adult learning methods will be applied:	**Training methodology** During this training course, the following adult learning methods will be applied:	**Training methodology** During this training course, the following adult learning methods will be applied: • Lecture

• Lecture • Demonstrations • Group discussions Practical /hands on **Training outcome** Learners will gain technical competency in reading, interpretation and storage of MGIT positive samples..	• Lecture • Demonstrations • Group discussions Practical /hands on **Training outcome** Learners will gain technical competency in preparation of MGIT DST, setting MGIT DST, reporting, interpreting and troubleshooting MGIT DST result	• Lecture • Demonstrations • Group discussions • Practical /hands on **Training outcome** Learners will gain technical competency in correctly performing first and second line LPA	• Demonstrations • Group discussions • exercises **Training outcome** Learners will gain knowledge in importance of LQMS and be conversant with the twelve quality system essentials.
Dates:	**Dates:**	**Dates:**	**Dates**
Credit units: 5	**Credit units: 3**	**Credit units: 4**	**Credit units: 3**
Duration: 10 days	**Duration: 10 days**	**Duration: 10 days**	**Duration: 10 days**
Language: English	**Language: English**	**Language: English**	**Language: English**

Drug Susceptibility Testing Proficiency Testing (DST PT) **Introduction** DST PT is an EQA program involving sending a panel of sample to a group of participating labs as a means of verifying the reliability of DST lab results **Goal:** To strengthen the competencies of laboratory personnel to	**Laboratory Information System (LIS)** **Introduction** Medical laboratories perform tests on clinical specimens in order to obtain information about the health of a patient Laboratory information management is a key function in a laboratory quality management system considering that the end	**TB Specimen Referral System (TSRS)** **Introduction** The WHO End TB Strategy calls for the early diagnosis of TB and universal drug-susceptibility testing (DST)whose targets can only be achieved when all patients have access to modern diagnostics at or near the POC as well as access to more advanced testing available at regional or central levels. Specimen referral systems play a	**Monitoring and Evaluation (M & E)** **Introduction** Monitoring and evaluation (M&E) of development activities provides government and development practitioners with information for : Better means for learning from past experience, Improved service delivery, Planning and allocating resources, and Demonstrating results as part of accountability to key stakeholders. **Goal**

prepare DST PT panels according to the approved standards.	product of the laboratory is information (test results) **Goal:** To develop and strengthen participant competencies in LIS	critical role in ensuring access to laboratory services It allows patients to receive care and treatment at one location, while their specimens are transferred to various levels of a tiered laboratory system for testing **Goal:** To develop and strengthen participant competencies in TSRS	To develop and strengthen the competencies of laboratory personnel in M and E
			
Objectives: By the end of this course participants should be able to: • Understand the need for evaluation of Lab competence in DST testing • Learn how to prepare, package and ship DST PT materials • Learn how to analyze DST	**Objectives:** By the end of this course participants should be able to: • understand data management concepts • understand paper based and computerized	**Objectives:** By the end of this course participants should be able to: • Understand the design and communication structure of TSRS • Understand TB sample collection and labelling • Understand TB sample packing and transport	**Objectives:** By the end of this course participants should be able to: •

PT data • information management system • diagnostic information systems • information security • LIS maintenance	• Understand TSRS documentation	
Target group: Laboratory personnel who is currently involved or is proposed to prepare DST PT materials.	**Target group:** • Data managers • Data clerks	**Target group** • Laboratory technical personnel • Laboratory managers	**Target group:** • Laboratory technical personnel • Laboratory managers and heads • Laboratory M & E officials • Data personnel
Training methodology During this training course, the following adult learning methods will be applied: • Lecture • Demonstrations • Group discussions • Practical /hands on	**Training methodology** During this training course, the following adult learning methods will be applied: • Lecture • Demonstrations • Group discussions • Practical /hands on	**Training methodology** During this training course, the following adult learning methods will be applied: • Lecture • Demonstrations • Group discussions • Practical /hands on	**Training methodology** During this training course, the following adult learning methods will be applied: • Lecture • Demonstrations • Group discussions • exercises
Training outcome Learners will demostrate technical competency in preparation, packaging, shipping and analyzing of DST PT materials.	**Training outcome** Learners will gain competency in managing the laboratory information system.	**Training outcome** Learners will implement [the design and structure of TSRS into their laboratory systems.	**Training outcome**
Dates:	**Dates:**	**Dates:**	**Dates**
Credit units: 4	**Credit units: 2**	**Credit units: 2**	**Credit units: 2**

Duration: 10 days	**Duration: 10 days**	**Duration: 5 days**	**Duration: 5 days**
Language: English	**Language: English**	**Language: English**	**Language: English**

For one to participate in the course, you must fulfil the above requirements and in addition complete prerequisite form (CT001 F18) and agree to terms and conditions (CT001 F24).

Note: admission, cost and changes on the training schedule is reserved to the CE/T Program coordinators. Please contact training@ntrl.or.ug for more information.

Attaining CEUs

- The number of CEUs for each training course has been determined in SOP CT006 (Calculation of CEUs).
- The learner has to attain all the CEUs for a specific training course to qualify for certification below.
- For a learner to attain all the CEUs for a specific course, he/she must have 100% daily attendance for scheduled course activities including pre/post-tests, practical sessions, theory session etc.

Awarding of training certificates.

The learner is scored according to the assessment matrix (attendance 20%, exercises 10%, practical's 20% and post-tests 50%) to determine the type of certificate to be awarded.

a. Certificate of attendance: Learner scores less than 80%
b. Certificate of achievement: Learner scores at least 80%

Communication to the learner that does not attain the required CEUs will be done verbally at the end of the training event followed by an official email by the training coordinator.

Non-discrimination policy:

Uganda NTRL/SRL does not and shall not discriminate on the basis of race, color, religion (creed), gender, gender expression, age, national origin (ancestry), disability, marital status, sexual orientation, or military status; in any of its activities including training therefore the Uganda NTRL/SRL gives equal opportunity to learners seeking training.

Conflict of interest disclosure:

Persons or groups are required to disclose a potential, perceived, and actual conflict of interest while executing their duties at the Uganda NTRL/SRL. There is no conflict of interest for all the learning courses offered

Confidentiality Policy:

Correspondences and information related to training courses shall be kept confidential unless consent for disclosure has been granted in writing by Uganda NTRL / SRL.