CDC Laboratory Training Program

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Center for Surveillance, Epidemiology, and Laboratory Services

Laboratory Training Branch

Laboratory Training Branch

Mission:

 Provide continuing education opportunities designed to enhance the capability and capacity of the public health, clinical, and agency laboratory workforce.

Training Topics:

- new diagnostic testing procedures for current and emerging public health threats
- Iaboratory safety and security
- quality management
- regulatory compliance
- emergency response and preparedness
- bioinformatics for laboratory surveillance







CLINICAL AND LABORATORY STANDARDS INSTITUTE





















care & Medicaid Services

Instructional Design Process





Seminars and Webinars



Hands-On Workshop



Evaluation

- All training is evaluated based on the Kirkpatrick Levels
 - Reaction
 - Knowledge Gain
 - Behavior Change
 - Result

 Evaluation data provides measure of training effectiveness

- Validates the money spent
- Justifies additional training efforts
- Identifies improvements for better results the next time

 Evaluation is the most critical part of the training process

CDC Laboratory Training Program



Changing Training Environment

- Laboratory training has traditionally been designed to be instructor-led
- Decreased budgets and reduced staffing make it difficult for the audience to travel to the instructor
- Decreased budgets and reduced staffing make it difficult for the instructor to travel to the audience
- Laboratory training must embrace the advances in communications technology

Training Distribution in the 21st Century

- Seminars become Webinars
- Hands-on workshops become blended learning
- Hands-on instruction replaced with video and "mentored" training
- Distance learning tools (webinars, eLearning, podcasts) emphasized

Training Barriers

External Training Barriers

- Budget
- Course calendars do not align with Laboratory calendars
- Cannot cover staff absence from lab for extended period

Internal Training Barriers

- Cannot afford senior staff time to create materials
- Cannot afford senior staff time to maintain materials
- Cannot afford absence from lab bench for training period

New Concept – Training Curricula

- Advanced Level
 - Advanced Organism Specific Interpretation
 - Web-Based Case Study Discussions
 - Conference Short Courses
- Intermediate Level
 - Organism Specific Tests
 - AST
 - Influenza
 - Mycobacteriology
 - Many others
- Basic Level
 - Core Lab Skills
 - Biosafety/Biosecurity
 - Basic Microbiology
 - Quality Management
 - Basic Molecular Biology
 - CLIA

Training Curricula

Blended Learning Approach

- Multimedia-enhanced eLearning for didactic content
 - Purpose supplemented with graphic illustration or animation
 - Theory supplemented with illustration, video, or animation
 - Process supplemented with video
 - Troubleshooting supplemented with video
- "Mentored Training" for experiential content
 - Downloaded lab exercises
 - Editable to match lab SOP
 - Mentor facilitation instructions
 - Bench aids

Basic Microbiology Curriculum - Microscopy Course



Video Demonstrating How to Focus the Ocular Micrometer of a Microscope For a captioned version, please visit: <u>http://www.youtube.com/watch?v=pYqDSQI326M</u>

Basic Microbiology Curriculum - Microscopy Course

Laboratory Exercise III

Objectives:

After completing this laboratory exercise, you will be able to:

- > Apply focusing techniques for the 10X, 40X, and 100X objectives to achieve optimal field of view.
- > Use the 100X objective with oil immersion to detect and identify microscopic organisms.
- > Compute total magnification for the 40X high dry objective as well as other objectives.

Exercises:

- 1. Place a microscope slide (Ex. Gram stain, Giemsa stain, etc.) on the brightfield microscope stage and focus on the specimen using the 10x objective. Besure to fully focus using the coarse and fine adjustment knobs. Now, move to the 40X objective and focus on the specimen. After the 10X and 40X examination has been completed, demonstrate how to look at a microscope slide using the 100X objective. Recall what is needed to complete the task and when to be cautious.
- 2. Calculate total magnification using your 40X high dry objective on your brightfield microscope.

Notes:



Mentor/Supervisor /Date

Laboratory Training Branch

Care and Maintenance of the Microscope

Introduction

Good preventive maintenance includes regular cleaning of oculars and objectives. To determine if your oculars are clean, rotate the left, then the right eyepiece between your fingers to identify debris. Never wear eye make-up, particularly mascara, when using your microscope because it can leave debris on the oculars that is difficult to remove. Have your microscope cleaned and maintained annually by a professional service person.

Supplies

- Commercial lens paper, cotton swabs or other soft tissue
- 2. Commercially available lens cleaner

Instructions

- Moisten the tip of a swab or piece of lens paper with lens cleaner.
- Working from the center out, in a circular motion, gently clean oculars and objectives.
- 3. Dry with a clean, dry swab or lens paper.
- Clean the stage of the microscope with a suitable cleaner.
- Thoroughly dry the stage with a new piece of lens paper.
- Wipe off the top of the condenser with a clean lens paper moistened with lens cleaner, then dry the condenser with a dry piece of lens paper.









Curricula in Development

- Basic Microbiology (May 2014)
- Antimicrobial Susceptibility Testing (Summer 2014)
- Laboratory Biosafety (2015)
- Basic Molecular Biology (2015)
- Quality Management Systems (2016)
- All CDC Laboratory Training can be found at: <u>http://www.cdc.gov/labtraining/</u>

Training Barriers

External Training Barriers

- Budget Travel and Course Registration fees eliminated
- Calendar Alignment Lab schedules training when needed
- Week of Staff Absence Staff now trained onsite

Internal Training Barriers

- No time to create materials Materials created for the Lab
- No time to maintain materials Materials maintained for Lab
- Cannot afford absence from lab bench for training period
- Note: Training cost not completely eliminated.
 Lab must pay for materials used in lab exercises.

Summary

• The CDC Laboratory Training Branch (LTB) focuses on training of public health importance.

Questions

For more information please contact Centers for Disease Control and Prevention

1600 Clifton Road NE, Atlanta, GA 30333 Telephone: 1-800-CDC-INFO (232-4636)/TTY: 1-888-232-6348 Visit: www.cdc.gov | Contact CDC at: 1-800-CDC-INFO or www.cdc.gov/info

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.



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