Laboratory General Checklist: Safety for Laboratory Workers

Jerry L. Harris, MD, FCAP
November 19, 2008
Objectives:
• Identify opportunities to make your lab a safer place for employees
• Apply safety requirements during inspections and inspection preparation

Accreditation
The College of American Pathologists (CAP) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide continuing medical education for physicians.

CME Category 1
The College of American Pathologists designates this educational activity for a maximum of 1 AMA PRA Category 1 Credit™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

CE (Continuing Education for non-physicians)
The CAP designates this educational activity for a maximum of 1 credit/hour of continuing education. Each participant should only claim those credits/hours he/she actually spent in the activity.

ASCP Statement
This activity is acceptable to meet the continuing education requirements for the ASCP Board of Registry Certification Maintenance Program.

California and Florida Statement
This activity is approved for continuing education credit in the states of California and Florida.
Learning Objectives

- Identify opportunities to make your lab a safer place for employees.
- Apply safety requirements during inspections and inspection preparation.

Evaluate Lab Safety Practice

1. Does the laboratory have appropriate written procedures?
2. Is there documentation that the procedures are being followed?
3. Watch or ask employees questions about how they follow procedures.
Gram Stain Spinal Fluid

Technologist makes gram stain of CSF and sets up culture

Microbiology Safety

• MIC.19035 Phase II
• Are there documented policies and procedures for the safe handling and processing of specimens?
• NOTE: Suggested topics to be considered in the policies and procedures for the safe handling and processing of specimens include the need for tight sealing of containers, avoiding spills of hazardous materials, requirements for wearing gloves, the need for respirator protection, availability and use of vaccinations, and the potential hazards of sniffing plates.

Microbiology Safety

• MIC.19060 Phase II
• Have policies and procedures been developed to minimize the occupational risk of exposure to infectious agents handled in the microbiology laboratory, in accordance with current recommendations regarding the biosafety levels for working with different organisms?
Microbiology Safety

- Fatal cases of Neisseria meningitidis have been reported in microbiology technologists
- Infection has been associated with manipulated sterile site isolates
- Sterile site isolates of N. meningitidis should be manipulated in a BSC

Bioterrorism

- MIC.18968 Phase I
  Does the microbiology laboratory have policies and procedures for the recognition of isolates that may be used as agents of bioterrorism?
  What do you do if a blood culture turns positive and you see poorly staining tiny coccobacillary bacteria on gram stain of the bottle?

Bioterrorism

1. Take enhanced BSL-2 precautions
2. Refer organisms to reference lab
Brucella

Brucella high risk laboratory acquired infections.
Lab preparedness survey (exercise) attenuated strain distributed.
916 lab workers potentially exposed in 254 labs.

Brucella

Subculture in Biosafety Cabinet.
Avoid aerosols. Tape plates shut.
Use BSL level 3 practices.
Refer to State Public Health Lab or Health Officer.

Biosafety Levels

<table>
<thead>
<tr>
<th>BSL</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>BSL-1</td>
<td>Agents not causing human disease</td>
</tr>
<tr>
<td>BSL-2</td>
<td>Moderate risk by ingestion or skin or mucous membrane exposure</td>
</tr>
<tr>
<td>BSL-3</td>
<td>Aerosol risk by serious agents which are treatable</td>
</tr>
<tr>
<td>BSL-4</td>
<td>Aerosol risk by exotic life-threatening agents which are not treatable</td>
</tr>
</tbody>
</table>
Organism Risk Groups

| Risk Group 1 | No disease in healthy adults, e.g., Bacillus subtilis |
| Risk Group 2 | Human disease usually not serious, preventable and/or treatable |
| Risk Group 3 | Serious or lethal disease, usually preventable and/or treatable |
| Risk Group 4 | Serious or fatal disease not preventable or treatable |

Biosafety Cabinets (BSC)

All have HEPA filters in exhaust air:

| Class I | No HEPA filter in air supply |
| Class II | HEPA filter in supply air – open face cabinet |
| Class III | Gas-tight enclosure with a non-opening view window |

Splash Protection

- GEN.72700 Phase II
- Do personnel use the proper personal protective devices when handling corrosive, flammable, biohazardous, and carcinogenic substances?
Eye Wash

• GEN.72500 Phase II

Is there an emergency eyewash within 100 ft. or 10 seconds travel distance from every area of the laboratory in which hazardous chemicals (irritating, corrosive, or toxic by contact or absorption) or biohazards are present, and is the eyewash tested regularly?

Eye Wash

• Easily accessible
• Well marked with easily visible sign
• Well lit
• Path free of obstruction, e.g., door
• Fluid tepid (60 degrees F)
• Both eyes simultaneously
• Nozzles protected from airborne contaminants

Eye Wash

• Once activated, hands free
• Deliver fluid no less than 1.5 liters/minute for at least 15 minutes
• Shut-off valve if present must be protected from unauthorized shut off
• Must be certified by flow meter
ANSI – Z358.1-2004
Review of Safety Practices

- GEN.71350  Phase II
- Is there documented periodic review (at least annually) of safe work practices, e.g., by a safety committee?
- NOTE: This review may be documented by safety committee minutes or by the records of regular safety inspections

Fire Drills

- GEN.70250  Phase II
- Are fire drills conducted periodically?

Must actually exit.
Everyone must be involved annually.

Eval of Chemical Hygiene Plan

- GEN.70500  Phase II
- Is there annual review and evaluation of effectiveness of the laboratory's Chemical Hygiene Plan?

There must be written evaluation at least annually.
Spills? Safety committee function?
Chemical Safety

• GEN.72075 Phase I
  Are supplies of acids and bases stored in separate cabinets near floor level?

  Change proposed – Do not need separate cabinets

Noise

• Does the laboratory have a policy to protect personnel from excessive noise levels?
  • ? Noisy instruments
  • ? Construction

Noise

• Need Policy
  • Can employees hear each other?
  • Measure noise if questions arise
Universal Precautions

- GEN.71100 Phase II
- Have all personnel reasonably expected to have direct contact with body fluids received education on precautionary measures, epidemiology, modes of transmission and prevention of human immunodeficiency virus (HIV), hepatitis C virus (HCV) and hepatitis B virus (HBV) and the application of “universal precautions” or “standard precautions” to their work practices?

Summary

- Safety Procedures must protect all employees.
- Procedures reviewed annually.
- Effectiveness of Plan evaluated annually and documented.
- Train new employees in safety procedures.
- Continuing education for all employees in safety procedures.

Resources

Resources


Technical Assistance

http://www.cap.org
Email: accred@cap.org
800-323-4040, ext. 6065

Questions?
Past Audioconferences

- Missed part/all of an audioconference?
- Want to hear it again?
- Want to tell a co-worker?
- Virtual Library of Past Audioconferences
  - Available 24/7 on www.cap.org 4 weeks post session (see Attachment A for steps on how to access post audioconferences).
  - Laboratory Improvement and Accreditation tab
  - Preparing to Inspect

Attachment A: Steps to Access the Virtual Library of Past Audioconferences

#1 College of American Pathologists
#2
#3
Attachment A: Steps to Access the Virtual Library of Past Audioconferences

1. Visit the College of American Pathologists website.
2. Click on the "Accreditation and Laboratory Improvement" section.
3. Access your new customized Laboratory Accreditation Program reports online.