CLIAC Biosafety Workgroup Final Report

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Clinical Laboratory Improvement Advisory Committee (CLIAC) Recommendations

CLIAC has issued five recommendations that address safety:

February 2001	April 2015	April 2016	November 2016	November 2019
Wild poliovirus containment	Emerging infections	Biosafety in clinical laboratories: an unmet national need	Laboratory-associated incident reporting system	Laboratory workforce: safety included

https://www.cdc.gov/cliac/php/meetings/?CDC_AAref_Val=https://www.cdc.gov/cliac/past-meetings.html

CLIA Regulations - Safety

Definitions

Operator means the individual or group of individuals who oversee all facets of the operation of a laboratory and who bear primary responsibility for the safety … The term includes –

(1) A director of the laboratory…; and

(2) The members of the board of directors and the officers of a laboratory…

§ 493.1101 Standard: Facilities.

(d)Safety procedures must be established, accessible, and observed to ensure protection from physical, chemical, biochemical, and electrical hazards, and biohazardous materials.

Subpart R - Enforcement Procedures § 493.1804 General considerations.

(a) *Purpose.* The enforcement mechanisms set forth in this subpart have the following purposes:

(1) To protect all individuals served by laboratories against substandard testing of specimens.

(2) To safeguard the general public against health and safety hazards that might result from laboratory activities.

CLIAC Biosafety Workgroup

Workgroup Charge

- Charged with providing input to CLIAC for consideration in making recommendations to the Department of Health and Human Services (HHS) on the potential additions to the CLIA regulations and the need for solutions that will provide a safe working environment for the nation's clinical and public health laboratories.

Workgroup Members

- Michael A. Pentella, PhD, D(ABMM) - Chair
- Víctor R. De Jesús, PhD - Designated Federal Officer
- Nancy Cornish, MD - Workgroup CDC Ex Officio
- Lane N. Vause, MS, MPH, MLS(ASCP)^{MBCM}, CPH - Workgroup CMS Ex Officio
- Amy Zale, MT(ASCP) - Workgroup FDA Ex Officio
- Latess Atkins-Banks, MBA, MLS(ASCP)^{CM}
- Kathleen G. Beavis, MD
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- David Hill, MEM, CIH
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- Tracie Nichols, MS, MLS (ASCP), SBB^{CM}, CABP, CQA (ASQ)
- Luis Ochoa Carrera, MS, IFB^{CP}
- Elizabeth Palavecino, MD, FACP
- Marcia Pindling, DMH, MS, RBP (ABSA), MT, M(ASCP)
- James Pusavat, BSMT, MLS(ASCP), CLS(NCA), SM(ASCP)
- Kimberly Starr, PhD, D(ABMM)
- April Veoukas, JD

Question 1

- In vitro diagnostic product (IVD) instrument design plays a key role in mitigating biosafety. How can biosafety issues for instruments in use and new instruments in the design phase be addressed?
  - 1a - How do manufacturers currently assess biosafety considerations for established instruments and instruments being developed?
    - Are there user communities in which biosafety issues are discussed? If so, what are they? Are manufacturers included in these communities?
    - Are there mechanisms that facilitate collaboration between manufacturers and clinical laboratories to incorporate or improve biosafety features?

Question 1b and c

- 1b - In designing new instruments, what biosafety considerations are there?
  - Decontamination/sterilization?
  - Use of disposable parts?
  - Others?
- 1c - Is there collaboration between manufacturers and clinical laboratorians during the design stage for new instrumentation to improve biosafety features?

Q1: Workgroup Discussion & Consensus

- Laboratories should have a requirement to perform a risk assessment on all instrumentation currently in use and before purchasing new equipment.
- Laboratory equipment manufacturers have protocols for disinfection and/or decontamination, but they are mainly from the standpoint of the instrument to avoid or prevent cross-contamination for the specific agent they are detecting.
    - Often, instructions are unclear, hard to locate and focused on the patient versus the operator.
- Robust model systems and appropriate assays should be created to generate biologically meaningful decontamination data that can be extrapolated to an emerging pathogen situation.
- Instrument cleaning and decontamination guidance should be standardized and easily identified in the instruction manual provided to the end user.
    - A centralized location, repository, or website that manufacturers can use to post such guidance would be useful.

Question 2

- 2 - Laboratories handle specimens that contain unknown pathogens routinely. What assurance is there that proper biosafety activities are established, effectively provided/communicated, and followed?
  - 2a - Are training materials for laboratorians available that focus on instrument operation, and cleaning and disinfection practices?
    - Do currently available biosafety training materials include sufficient information regarding instrument disinfection? What should be included in these trainings?
  - 2b - Are there mechanisms that would ensure annual biosafety training and/or competency assessment of laboratory staff?

Q2: Workgroup Discussion & Consensus

- There is inadequate biosafety training related to instrument operation and decontamination.
  - Training should be developed to include service engineers, application specialists, trainers, and others who are not necessarily medical technology trained.
  - The laboratory director is responsible for ensuring that individuals entering the laboratory are trained in disinfection and decontamination cleaning procedures, especially maintenance procedures.
- Partnerships with manufacturers are essential in developing training for new instrumentation.
- Training should be provided for the entire laboratory process with people from different perspectives, i.e., surgical pathology, core facility, and hematology.
  - Ideally, the training will include case studies and provide the learner with an understanding of the source of the dangers, how to identify those hazards, and how to start mitigation.
- No standardized mechanisms are in place to assess biosafety competency adequately, development is needed.

Question 3

Currently, the Facilities standard at § 493.1101(d) indicates that "Safety procedures must be established, accessible, and observed to ensure protection from physical, chemical, biochemical, and electrical hazards, and biohazardous materials."

- 3 - What additions to the CLIA regulations could be made to ensure that laboratories are required to have policies and procedures addressing laboratory biosafety?
- 3a - Should the CLIA regulations be updated to include additional safety standards as related to facilities that could include, but not be limited to, the items listed below?
  - Proper workspace ventilation.
  - Proper decontamination processes.
  - Appropriate biosafety equipment and personal protective equipment available.
  - Requirement to report results of highly infectious organisms, potential agents of bioterrorism, and unusual multi-drug resistant organisms to State Public Health laboratories or CDC as required by Federal, State, or local government authority.

Question 3b

Currently, the General Considerations Standard at § 493.1804(a)(2) indicates that “To safeguard the general public against health and safety hazards that might result from laboratory activities.”

- 3b - Should the CLIA regulations be updated to include additional safety standards related to General considerations?

Q3: Workgroup Discussion & Consensus

- Revising CLIA guidelines might have cost implications and should be based on the lab specific risk assessment.
- FDA review does not include biosafety aspects but is more in the context of the potential for false positive or negative results.
- Manufacturers should refine and provide the scope of decontamination of laboratory equipment through the risk assessment process and provide this information to end users.
- Defining the range of risk assessment was emphasized. It was agreed that the language should be comprehensive, including hazard assessment, mitigation, and performance monitoring.
- Reporting requirements for the identification of certain pathogens should be kept general but noted that better synthesis and coordination are needed from the agencies on reporting requirements.

Question 4

- Clear instructions and communication are key to addressing biosafety. Therefore,
  - 4a - How can manufacturers and clinical laboratories work together to provide clear, readily available biosafety instructions for each phase of testing, cleaning and disinfection practices, and maintenance of the instrument?
  - 4b - What resources are available for manufacturers to gain biosafety-related input to develop appropriate instructions (e.g., Environmental Protection Agency lists, Occupational Safety and Health Administration regulations)?
  - 4c - How can manufacturers gain input from biosafety professionals to aid the development of supplemental biosafety testing instructions for end users and service representatives?
  - 4d - How can non-regulatory organizations (e.g., the Clinical and Laboratory Standards Institute, the International Organization for Standardization), professional societies (e.g., The Association for Biosafety and Biosecurity, The American Society for Microbiology), and other interested parties assist in facilitating the process for manufacturers and laboratories?

Q4: Workgroup Discussion & Consensus

- Increased collaboration between equipment manufacturers and clinical and public health laboratories was encouraged.
    - It was suggested that an organizational approach between the interested parties would be more appropriate for developing these resources.
- The workgroup suggested that the FDA should explore adding a requirement that the manufacturer provide biosafety guidance as part of product review and clearance.
- A common theme was the notion that a space should be created to serve as a centralized repository for biosafety information that both the manufacturers and end-users can access.
- The workgroup discussed updating CLIA requirements to include biosafety training as part of testing personnel competency requirements. It requested the development of an implementation guide.
- It was clarified and reinforced that the manufacturer's instructions for use must be sufficient for users and manufacturers' service personnel to accomplish disinfection and provide sufficient detail to allow incorporation into the laboratory's site-specific risk assessment.

Workgroup Agreements

1. The workgroup agreed that a standardized definition of a biosafety risk assessment should be developed and added to 42 CFR 493.2.
2. The workgroup agreed that language in the definition of a biosafety risk assessment should be comprehensive about the risk assessment, including hazard assessment, mitigation, management, and performance monitoring.
3. The workgroup agreed that laboratories should be required to perform a risk assessment on all instrumentation currently in use. Before implementation, laboratories should consider biosafety risks when purchasing new equipment and must complete a risk assessment (analogous to analytic verification).
4. The workgroup agreed that 42 CFR 493.1804(a)(2) should be expanded to clarify that laboratory workers and, in turn, the general population should be safeguarded.
5. The workgroup agreed that a Food and Drug Administration (FDA) requirement(s) on biosafety risk assessment for device approval would support clinical laboratory biosafety and the health of the public.

Workgroup Agreements

6. The workgroup agreed that it is the laboratory's responsibility to obtain the written equipment disinfection instructions and practices, preferably before purchase. Additionally, end users should incorporate the manufacturer’s detailed instructions and practices into their biosafety risk assessments and routine practices.
7. The workgroup agreed that CLIA requirements should be revised to include biosafety training as part of testing personnel competency requirements.
8. The workgroup agreed that there is a need for annual biosafety competency assessments.
9. The workgroup agreed that there is value in increased collaboration between equipment manufacturers, clinical and public health laboratories, and regulatory agencies to improve knowledge of instrument risks and hazards and effective mitigation and decontamination practices. Additional research is needed to determine the best path forward.