Point of Care Testing (POCT) Personal Protective Equipment (PPE) Toolkit

Disclaimer

This toolkit is designed for professionals and volunteers who perform or coordinate point-of-care Testing (POCT) at non-laboratory sites and its content is intended for informational purposes only. The inclusion of specific resources does not imply endorsement or recommendation by the Department of Health and Human Services or the Centers for Disease Control and Prevention (CDC).

CDC is not responsible for any errors or omissions that may occur by individuals using this toolkit. Each facility must comply with applicable federal, state, territorial, and local requirements and ensure its onboarding manual contains the correct information specific to the facility's processes and procedures.

Each facility should determine how often its personal protective equipment (PPE) processes and procedures should be updated. Best practices should be to make updates on a predetermined regular basis, such as annually.

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Introduction

The Personal Protective Equipment (PPE) Toolkit is a guide of resources on using PPE to perform point-of-care testing (POCT) in a non-laboratory setting. It is based on CDC recommendations and Occupational Safety and Health Administration (OSHA) PPE standards. These standards list PPE requirements and guide training efforts.

The PPE Toolkit includes helpful information and suggestions for adapting and using PPE components safely within non-laboratory settings or facilities.

This toolkit contains the following sections on PPE:

- Standards
- Selection
- Training Requirements
- Training Materials
- Training Documentation
- Competency Assessment

Important: We recommend that you use this toolkit in its online form so direct links to templates and resources are easily accessible to you.

PPE Standards

PPE is specialized clothing and equipment designed to minimize exposure to hazards that cause serious workplace injuries and illnesses. When used appropriately, PPE provides a barrier between the skin, mouth, nose, or eyes (mucous membranes) and infectious materials such as viral and bacterial contaminants.

The Occupational Safety and Health Administration's (OSHA's) Laboratory Standards (specifically Standard 29 CFR 1910.1450) can help protect laboratory professionals, professionals, and volunteers who perform or coordinate POCT at non-laboratory sites. Enforcement of OSHA standards may be a shared responsibility of the federal government and state occupational safety and health programs.

As part of those standards, OSHA has established guidance 29 CFR 1910 Subpart I: Personal Protective Equipment, which regulates PPE standards and usage.
Employers must:

- Ensure PPE is used and maintained in a sanitary and reliable condition to protect employees from hazards.
- Ensure employee-owned equipment is adequate, properly maintained, and sanitary.
- Ensure that the PPE being used is safe in design and construction.
- Conduct a hazard assessment and select protective equipment accordingly.
- Prohibit the use of defective or damaged protective equipment.
- Provide PPE training to employees.
- Provide required PPE at no cost to employees, except for non-specialty safety-toe protective footwear and prescription safety eyewear.

In addition, the National Institute for Occupational Safety and Health (NIOSH) collaborates with OSHA to improve workplace safety and health practices. NIOSH has developed a comprehensive search tool, the PPE-Info Database, to help individuals locate relevant federal regulations and consensus standards for PPE.

Lastly, 22 OSHA-approved occupational safety and health State Plans are currently in effect. State Plans are OSHA-approved workplace safety and health programs operated by individual states or U.S. territories. The State Plans' standards are at least as effective as OSHA's federal guidelines and may feature more stringent standards for PPE.

PPE Selection

PPE selection must be based on the needs identified through site- and procedure/activity-specific risk assessments, which determine what could go wrong, such as breathing in infectious material or touching contaminated objects and surfaces.

Risk assessments and actions to reduce the potential hazard measures are dependent on:

- The procedures performed
- Identification of the hazards involved in the activities and procedures
- The competency level of the personnel who perform the procedures and activities
- The instrument, equipment, and facility
- The resources available

For more information on risk assessment, review the Point of Care Testing: Risk Assessment Basics.

Table 1 lists protection areas and examples of common PPE.

Table 1: PPE Protection Areas

Areas: **Eye and face protection**

Description: Protects eyes or face from flying objects, droplets, splashes and potentially harmful substances

PPE Types: Eye protectors (safety glasses, goggles)
Face protectors (shields, masks)

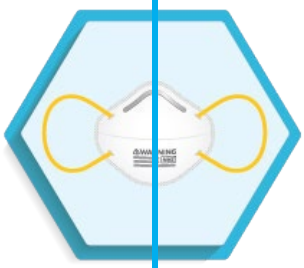
Link to Standard: 29 CFR 1910.133

Area: **Respiratory protection**

Description: Helps protect the respiratory system from exposure to infectious aerosols or drop during routine procedures

PPE Types: Filtering facepiece respirators (N95)

Link to Standard: 29 CFR 1910.134



Area: **Hand protection**

Description: Helps protect hands from exposure to hazardous materials and reduces risks associated with skin contact

PPE Types: Safety gloves (latex, vinyl, nitrile)

Link to Standard: 29 CFR 1910.138

Area: **Body protection**

Description: Helps shield the body from hazards (e.g. chemicals, infectious bodily fluids, and other hazardous materials)

PPE Types: Wraparound gowns, laboratory coats, aprons, full-body suits (coveralls)

Link to Standard: Protective Clothing

Areas: **Foot protection**

Description: Helps protect feet from splashes, chemicals, heat, and other hazards, such as crush injuries

PPE Types: Closed-toe shoes with solid and impermeable uppers, surgical booties

Link to Standard: 29 CFR 1910.136

PPE Training Requirements

Effective PPE training provides accurate, clear, and practical guidance to prevent work-related injuries and illnesses. Proper training also encourages employees to advocate for a safer working environment.

OSHA Standard 29 CFR 1910.132(f) outlines requirements for PPE training. According to this standard, at minimum, each employee should know the following:

- When PPE is necessary
- What PPE is necessary
- What the difference is between donning (putting on) and doffing (taking off) PPE
- How to properly don, doff, adjust, and wear PPE
- What the limitations of PPE are
- What the guidelines are for the proper care, maintenance, useful life, and disposal of PPE

PPE training should be provided at the following times:

- Upon hiring
- Periodically throughout employment, annually at a minimum
- Whenever an employee seems to lack the understanding or skill to use PPE properly
- Whenever changes in the workplace or changes in the types of PPE make previous training obsolete
- When equipment, policies, or procedures are newly introduced or adjusted

Table 2 outlines PPE training guidance.

Table 2: PPE Training Guidance

When PPE is necessary:

Guidance:
Use PPE when conducting tasks involving potential exposures to hazardous materials or physical hazards in the workplace.

Usage Example:
Employees wearing PPE determined by procedure-specific risk assessment while performing a rapid Streptococcus A test.

What PPE is necessary

Guidance:
Perform risk assessments to identify the required PPE to use. Review and maintain the risk assessment for effectiveness.

Usage Example:
Perform a site —and procedure/activity-specific risk assessment to determine the appropriate PPE. Identify the hazards before performing procedures (e.g., manipulating patient specimens) and select the proper PPE to minimize the risk of possible infectious exposure (e.g., aerosol, splash protection).

What the limitations of PPE are:

Guidance:
PPE only protects the wearer. It is ineffective if not working or appropriately fitted, and protection levels are seldom reached. The use of PPE restricts the wearer to some degree. The psychological effect of PPE may be that the individual wearing the PPE feels more protected than they are.

Usage Example:
Ensure the PPE is proper for the procedure, in good, clean condition, and is combined with other control measures.

Explain how PPE effectiveness could be compromised (e.g., facial hair interferes with the proper fit of masks) or have an adverse effect on employees (e.g., rashes from gloves).

How to properly don, doff, adjust, and wear PPE:

Guidance:
Instruct and demonstrate each step of donning and doffing procedures.

Visually confirm that employees have completed each step to ensure adherence to procedures. Perform medical evaluations on employees required to wear respirators. Fit test employees use respirators of the same make, model, style, and size used when performing POCT.

Usage Example:
Confirm that employees are comfortable and able to extend their arms, bend at the waist, and go through a range of motions to ensure they have a sufficient range of movement while all body areas remain covered.

What the guidelines are for the proper care, maintenance, useful life, and disposal of PPE:

Guidance:
Store PPE in a clean, dry location that maintains the proper temperature. Review the manufacturer's PPE requirements for maintenance, useful life span, and decontamination procedures for reusable PPE.

Waste disposal regulations vary at the state and local levels; therefore, all waste disposals must comply with local, regional, state, national, and international laws.

Usage Example:
Demonstrate how to clean PPE properly and discuss the importance of proper cleaning (e.g., dirty goggles could impair vision or increase the risk of contamination). Demonstrate regularly how to inspect PPE for damages or general wear and tear. Refer to site policies and procedures regarding the proper disposal of hazardous waste.

PPE Training Materials

CDC provides several PPE training materials and resources, including web-based training courses, webinars, interactive sessions, informational videos, and job aids. You can access these resources through the links below.

CDC Web-Based Training –

- Fundamentals of Personal Protective Equipment (PPE) in Clinical Laboratories
  - This course is designed to assist clinical and public health laboratory professionals in applying risk management strategies to identify hazards, assess risks, and select appropriate PPE options.
- Lab Training VR: Personal Protective Equipment (PPE) Edition
  - This course empowers learners to apply knowledge and practice selecting appropriate PPE and properly donning and doffing it in a virtual museum.

CDC Microlearning Job Aids –

- How to Knot and Tuck Your Mask to Improve Fit
  - This brief video demonstrates how to improve the fit of a face mask.
- PPE Sequence
  - This printable job aid demonstrates the sequence for donning and doffing PPE.
- Glove Removal Job Aid
  - This printable job aid shows how to remove gloves safely.

PPE Training Documentation

Employers must maintain training records for all employees. These records document employees' understanding of training and ability to select and use PPE properly. Employers must keep training records current and provide them to authorized officials upon request.

Employers must document and save records of employees' course completions or certificates for web-based training.

PPE Competency Assessments

After adequate training, employees should be proficient in choosing the correct PPE based on site- and procedure/activity-specific risk assessment and donning and doffing PPE.

Competency assessments can identify potential knowledge or skill gaps. These assessments should be conducted:

- After initial PPE training and before performing work that requires PPE
- When new PPE training is required because of changes in the workplace, processes, or procedures
- When PPE retraining is required because an employee lacks the understanding or skill to use PPE properly, including an incident that resulted due to inappropriate PPE (e.g., not wearing PPE, wrong PPE)

Competency assessments can be conducted through direct observation. As with training documentation, employers must maintain records of competency assessments for all employees. Resources for training documentation and competency assessments can be found below.

- PPE Group Training Template
  - This printable PDF is an example of a training record that can be used to document the completion of required PPE training.
- PPE Competency Assessment Template Donning and Doffing
  - This printable PDF can be used to assess employees' PPE competence.

PPE Supply Management

Having appropriate PPE supplies is critical for testing professionals to perform their work. To ensure PPE supplies remain at the needed levels, implementing a PPE supply management plan would be beneficial.

A PPE supply management plan should include:

- The scope and purpose of the plan and the benefits the plan will provide
- An organizational chart that defines the PPE supply management responsibilities of various staff members
- A PPE checklist and guidelines for all PPE used in the testing facility

- Procedures for the decontamination of reusable PPE
- Policies for the extended use or reuse of non-visibly soiled PPE
- Methods for forecasting a potential PPE shortage
- Processes for quality monitoring and inventory management
- A regular review process for the PPE supply management plan

Finally, you can monitor your PPE supply and forecast your PPE needs with some assistance from the following tools:

- PPE Burn Rate Calculator
  - A spreadsheet that uses three levels to describe surge capacity and prioritize measures to conserve PPE supplies.

- NIOSH PPE Tracker App
  - An iOS- or Android-friendly application that includes a burn rate calculator, inventory tracker, and reporting functions.

Glossary

aerosol: fine, small liquid or solid droplets or particles <100 µm in diameter, invisible to the naked eye

aerosol-generating procedure: Any procedure that deliberately or accidentally results in the creation of tiny liquid or solid particles, which become suspended in the air as aerosols or droplets

air purifying respirator: a respirator with an air-purifying filter, cartridge, or canister that removes specific air contaminants by passing ambient air through the air-purifying element

competency assessment: the process of measuring a person's ability to perform a task

doffing: removing PPE in a way that avoids self-contamination

donning: putting on PPE properly to achieve the intended protection and minimize the risk of exposure

droplets: larger particles (>5 µm in diameter) that rapidly fall out of the air, contaminating gloves, the immediate work area, and the mucous membranes of the persons performing the procedure.

filtering facepiece respirator: a disposable air-purifying respirator that protects by filtering particles out of the air the user breathes.

fit factor: a quantitative estimate of the fit of a particular respirator to a specific individual, and typically estimates the ratio of the concentration of a substance in ambient air to its concentration inside the respirator when worn

fit test: the use of a procedure to ensure an individual has selected the correct size respirator and can medically fit to wear a respirator

hazard: anything with the potential to cause harm, injury, or illness, as an object, a chemical, an infectious organism, or a situation

hazard assessment: a way to identify potential hazards before they are encountered

hazardous waste: any waste that can be harmful to human health or the environment

impermeable: not allowing gas or liquid to pass through

inventory management: a process to manage the ordering, storage, and use of supplies

laboratory coat: an outer garment with buttons and cuffed sleeves worn to protect clothing from substances

microlearning: a small unit of information in an easy-to-understand format

non-specialty safety-toe protective footwear: a type of shoes that OSHA defines as usually having leather uppers and oil-resistant, non-skid soles (e.g., steel-toe shoes)

personal protective equipment (PPE): specialized clothing and equipment designed to minimize direct exposure to hazards or hazardous materials

point-of-care (POC) testing: Test performed at any location (inpatient or outpatient) where the patient receives care and provides a rapid result for patient treatment

powered air-purifying respirator (PAPR): an air-purifying respirator that uses a blower to force the ambient air through air-purifying elements to the inlet covering

procedure/activity-specific risk assessment: a process to evaluate the probability and consequences of exposure to a given hazard occurring while performing specific tasks, with the intent to reduce the risk by establishing the appropriate hazard controls to use

PPE procurement: the process of identifying which PPE and laboratory supplies is needed, how much stock must be kept on hand, and how to work with vendors to ensure access to the required PPE and laboratory supplies

quality monitoring: a process of evaluating the condition or status of an object

range of motion: how far a person can move part of their body, such as a muscle or joint, in multiple directions

respirator: a device designed to protect the wearer from inhalation of harmful substances

risk: a combination of the potential for harm and the likely severity of that harm

risk assessment: a way to identify the potential risks of a specific hazard that considers any controls being implemented to lessen the harm from that hazard

risk management: a process for identifying, analyzing, and handling potential risks

risk mitigation: actions and control measures that are put into place to reduce the risks to an acceptable level

sanitary: clean and safe for use

site-specific risk assessment: a way to identify potential hazards in a specific location or environment

supply management plan: a process for maintaining supplies in balance with the demand for them

user seal check: an action conducted by the respirator user to determine if the respirator is sealed correctly to the face and no air is leaking

wraparound gown: laboratory wear that overlaps in the back to provide complete coverage