



Ebola (Ebola Virus Disease)

Estimated Personal Protective Equipment (PPE) Needed for Healthcare Facilities

To determine the amount of Personal Protective Equipment (PPE) a hospital needs for a multi-disciplinary healthcare team

PPE Calculator

To determine the amount of PPE your hospital needs to manage a patient with Ebola, click [HERE](#).

managing a patient with Ebola, facilities should consider various factors including: acuity of patient, configuration of the healthcare team/roles and intended interaction with patient, length of shifts, number of required breaks for staff wearing PPE, isolation unit location and support strategies, waste management strategy, lab location, lab testing demand, hospital protocols for products, and length of patient's hospital stay. Hospital inventory needs must be assessed on a case by case basis and should consider these and any other relevant factors. Because the ability to stockpile large amounts of PPE may be limited and re-ordering may not be immediate, it is recommended that facilities determine an appropriate interval for par level monitoring of PPE (e.g. every 8 hours) and designate a specific member of the team to complete this task.

Staffing models may include some of the following roles that should be considered when determining how much Ebola PPE is needed:

Healthcare Team Roles and Descriptions:

Role	Description
Nurses responsible for direct or indirect patient care	Nursing staff providing direct patient care. Includes primary and support nurses that are either in the patient room or in the anteroom donned and ready to care for patients or assist if needed. In many centers, this role may also be responsible for environmental cleaning while the patient is in the room.
Physician providing direct patient care	Includes any physician or specialty care practitioner entering the patient's room.
Trained observer to assist with donning/doffing	Person assisting with donning/doffing of PPE.
Environmental cleaning	Person responsible for cleaning/decontaminating the patient's room while the patient is present. May not require dedicated staff if nurses responsible for direct care perform environmental cleaning of patient room and anteroom.
Laboratory staff handling specimens	Staff should be considered if PPE is needed beyond normal PPE provided to lab staff

The following are examples of staffing models for Ebola Assessment Hospitals that have experienced caring for persons under investigation (PUI). These may be helpful when planning the configuration of your facility's health care team:

Example 1:

Patient was relatively stable. 2 nurses provided direct patient care (primary nurse, support nurse), 2 nurses provided environmental cleaning, and lab staff handling specimens was in Ebola PPE.

Role	Persons/shift	Shifts/day	Person/day
Nurses with patient contact	2	2	4
Physician with patient contact	1	1	1
Trained observer to assist with donning/doffing	1	2	2
Environmental cleaning (nurse staff)	2	2	4
Laboratory staff handling specimens	1	2	2
Total persons			12

Example 2:

Patient was considered unstable. 2 nurses provided direct patient care (primary nurse, support nurse) and were also responsible for environmental cleaning in the room, lab staff handling specimens was provided PPE through lab (normal lab PPE protocols)

Role	Persons/shift	Shifts/day	Person/day
Nurses with patient contact	3	2	6
Physician with patient contact	2	2	4
Trained observer to assist with donning/doffing	1	2	2
Environmental cleaning (nurse staff)	0	0	0
Laboratory staff handling specimens	0	0	0
Total persons			12

Example 3:

Patient was considered stable. 2 nurses provided direct patient care (primary nurse, support nurse) and were also responsible for environmental cleaning in the room, lab staff handling specimens was provided Ebola PPE.

Role	Persons/shift	Shifts/day	Person/day
Nurses with patient contact	2	2	4
Physician with patient contact	1	2	2
Trained observer to assist with donning/doffing	1	2	2
Environmental cleaning (nurse staff)	0	0	0
Laboratory staff handling specimens	1	2	2
Total persons			10

Example 4:

Patient was considered unstable. 3 nurses provided direct patient care (2 primary nurse, support nurse), 2 staff responsible for environmental cleaning in the room, lab staff handling specimens was provided Ebola PPE.

Role	Persons/shift	Shifts/day	Person/day
Nurses with patient contact	3	2	6
Physician with patient contact	1	2	2
Trained observer to assist with donning/doffing	1	2	2
Environmental cleaning (nurse staff)	2	2	4
Laboratory staff handling specimens	1	2	2
Total persons			16

Example 5:

Patient was relatively stable. 3 nurses provided direct patient care (2 primary nurses, 1 support nurse) and were also responsible for environmental cleaning in the room, lab staff handling specimens was in Ebola PPE.

Role	Persons/shift	Shifts/day	Person/day
Nurses with patient contact	3	2	6
Physician with patient contact	1	2	2
Trained observer to assist with donning/doffing	2	2	4
Environmental cleaning (nurse staff)	0	0	0
Laboratory staff handling specimens	2	1	2
Total persons			15

Range for Staffing Model

Range for number of staff needed on a healthcare team caring for a possible EVD patient may be as follows:

Role	Persons/shift	Shifts/day	Person/day
Nurses with patient contact	2-3	2	4-6
Physician with patient contact	1	2	2
Trained observer to assist with donning/doffing	1-2	2	2-4
Environmental cleaning (nurse staff)	0-2	2	0-4
Laboratory staff handling specimens	0-1	2	0-2
Total persons			8-18

How much product will each member of the team need per shift?

The table below provides estimates to help determine the number of changes of PPE each staff member on a team may need per shift. ***Quantities for products needed per shift should be multiplied by number of persons serving in that healthcare team role.*** Information in the table is a guide to help deliberate PPE needs. Facility estimates may vary from these projections based on facility specific planning and protocols.

Estimated quantities of Ebola PPE needed for health care teams by role for one shift

Estimated Disposable PPE Needed by Role per Shift*									
Health Care Team Roles**	Either Gowns or Coveralls Needed^		All Needed				Either PAPR		
	Gown	Coverall	Glove, Extended Cuff	Glove Exam	Boot/Shoe Cover	Fluid Resistant Apron	PAPR Shroud/Hood	PAPR Battery	P/ Fil
Nurse with patient contact	2	2	12	4	4	2	2	4	
Doctor with patient contact	1	1	2	2	2	1	1	2	
Trained Observer	2	0	2	2	2	0	0	0	
Env cleaning	2	2	12	12	12	2	2	4	
Lab Staff	2	2	4	4	4	2	2	4	

* Quantity of product per shift may vary based on multiple factors including patient acuity, length of shifts, breaks etc. Estimates in table assume 3-4 hour shift.

Hospitals may have additional roles that need to be considered. Roles in the table are defined above under “Healthcare Team Roles and Descriptions.**”

^ Reference [CDC PPE guidance](#) for specifications for impermeable and fluid-resistant gowns and coveralls.

^^ Powered air purifying respirator (PAPR) blower units/systems are not included in the table. These items may be reused post decontamination. Therefore, the quantity of PAPR blower units/systems needed per shift and per day should be based on the number of persons that may be using a PAPR blower and the time needed to decontaminate and ensure that these products are ready for use. One PAPR blower units/system will be needed for each staff member per shift who will be in direct contact with the patient. Should consider having 1.5 to 2 shifts worth of PAPR blower units/systems on hand to account for changing of staff and decon time.

Follow the manufacturer’s guidance to determine the need to replace/dispose of a filter during PAPR decontamination. Several manufacturers have added specific instructions for cleaning, disinfecting, and decontamination after use with a known or suspected Ebola patient. Estimate in the table assumes filter is being changed with each shroud/hood change.

N95 respirator selection must include surgical hood and full face shield.

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