



# Cal/OSHA Interim Guidance on Ebola Virus in Inpatient Hospital Settings

November 14, 2014

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This guidance document is intended to help hospitals preparing to provide inpatient care for Ebola patients meet requirements under Cal/OSHA regulations to protect employees from becoming infected with the Ebola virus. It is based on information current as of November 14, 2014, and is subject to ongoing revision due to continual changes in (1) the worldwide spread or containment of the Ebola virus, (2) notifications from the Centers for Disease Control and Prevention to the California Department of Public Health about travelers arriving from affected regions in West Africa, (3) public health guidelines and procedures to screen, isolate, refer, and transport suspected or confirmed Ebola patients to particular hospitals for diagnosis and treatment, and (4) availability of sufficient numbers of battery-powered air-purifying respirators (PAPRs) through commercial supply chains and governmental or other stockpiles.

Hospital inpatient settings, in which confirmed or suspected cases of Ebola may receive intensive treatment, are the focus of this guidance document because the highest risk of disease transmission will be present in those settings. As discussed below, Cal/OSHA regulations require hospitals to establish and implement exposure control plans to protect employees in the inpatient setting. The exposure control plans must also include procedures to protect employees in all other potentially affected areas of the hospital, including emergency departments (as discussed in section C2, below).

## A. Cal/OSHA Regulations

California regulations requiring hospitals to protect employees against exposure to Ebola virus disease are enforced by the Division of Occupational Safety and Health,<sup>1</sup> commonly known as “Cal/OSHA.” The requirements are contained in standards found in different sections of Title 8 of the California Code of Regulations. To read the standards, click on the links below. (Throughout this document, references to particular sections and subsections of Title 8 of the California Code of Regulations are shown as “8 CCR § \_\_\_\_\_.”)

- **Bloodborne pathogens.** The Cal/OSHA Bloodborne Pathogens (BBP) standard is in [8 CCR § 5193](#). This standard protects employees from exposure to diseases spread by contact with blood or other materials such as certain body fluids (called “other potentially infectious materials”).
- **Aerosol transmissible diseases.** The Cal/OSHA Aerosol Transmissible Diseases (ATD) standard is in [8 CCR § 5199](#). This standard protects employees in hospitals and other settings from exposure to diseases spread by inhalation of, or mucous membrane contact with, small liquid particles of body fluids released into the air (“aerosols”). [Appendix A](#) lists diseases and pathogens that are to be considered aerosol transmissible pathogens or diseases for the purpose of this standard.
- **Personal protection of the body, hands, eyes, nose, and mouth.** The Cal/OSHA standards for personal protective equipment (PPE) for body, hands, eyes, nose, and mouth (“PPE standards”) are in [8 CCR §§ 3380-3385](#). Additional requirements for protection of the body, hands, eyes, nose, and mouth are in subsection (d)(4) of the BBP standard, [8 CCR § 5193](#). The PPE standards and the

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<sup>1</sup> The Division of Occupational Safety and Health (Cal/OSHA) is within the California Department of Industrial Relations (DIR). In addition to enforcing health and safety requirements in workplaces, Cal/OSHA also provides phone and on-site consultation services to help employers meet the requirements. Cal/OSHA and DIR are committed to working closely with the California Department of Public Health (CDPH), as well as with employers and employee organizations, to ensure that employees in California are protected against exposure to the Ebola virus.

additional requirements in the BBP standard govern the selection, use, and maintenance of the equipment, as well as training on how to put on, use, and take off the equipment.

- **Respiratory protection.** The Cal/OSHA Respiratory Protection standard is in [8 CCR § 5144](#). Additional requirements for respiratory protection are in subsection (g) of the ATD standard, [8 CCR § 5199](#). The Respiratory Protection standard and the additional requirements in the ATD standard govern the selection, use, and maintenance of the equipment, as well as training on how to put on, use, and take off the equipment.
- **Injury and illness prevention program.** The Cal/OSHA Injury and Illness Prevention Program (IIPP) standard is in [8 CCR § 3203](#). This standard requires that employers institute a comprehensive health and safety program that addresses all potential hazards and encourages employees to report hazards without fear of reprisal.

## **B. Ebola Virus Disease**

Three countries in West Africa are currently experiencing an epidemic of Ebola virus disease, a disease with a mortality rate in Africa exceeding 50% and onset typically occurring between 2 and 21 days following exposure. The disease spreads primarily by infectious body fluids coming into contact with broken skin or mucous membranes of the eyes, nose, or mouth. Employees in inpatient hospital settings may also inhale small liquid particles of infectious body fluids released into the breathing zone (“aerosols”). In those settings, aerosol-generating procedures may be performed and employees are in close contact with infectious patients. Public health agencies have stated that persons in the community who do not have direct contact with infected, symptomatic persons or the body fluids of those persons are not at risk. In contrast, health care workers in direct contact with Ebola patients in Africa and in the United States have been identified as being at increased risk of contracting the disease.

Since September 2014, a small number of travelers with Ebola have entered the United States and have been treated in US hospitals. Two hospital nurses in the United States have become infected with Ebola while caring for an infected patient. For employees in inpatient hospital settings who may be called on to care for suspected and confirmed Ebola cases, consistent use of personal protection, including respiratory protection, will be required to prevent them from contracting infection.

For more information about Ebola and the current outbreak, please refer to the website of the US Centers for Disease Control and Prevention (CDC): <http://www.cdc.gov/vhf/ebola/index.html>.

## **C. Hospital Employers’ Exposure Control Plans**

Both the Cal/OSHA Bloodborne Pathogens (BBP) standard and the Aerosol Transmissible Diseases (ATD) standard require hospitals to have exposure control plans.<sup>2</sup> The purpose of these plans is to minimize or eliminate employee exposure by implementing a range of exposure control measures, including engineering and work practice controls, administrative controls, and use of personal protective

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<sup>2</sup> BBP standard at 8 CCR § 5193(c) and ATD standard at 8 CCR § 5199(d)

equipment (PPE). Copies of the plans must be available to employees and their representatives, as well as to Cal/OSHA.<sup>3</sup>

Hospitals must review and update their plans at least annually and whenever there are new conditions.<sup>4</sup> For example, hospitals' plans must be updated now to include new procedures for Ebola virus disease. Specific procedures for Ebola may be contained in one document, provided that they address the requirements of each standard.<sup>5</sup>

## 1. Active employee involvement

For employees who are at risk of exposure to the Ebola virus, each plan must include an effective procedure for obtaining the active involvement of those employees in reviewing and updating the exposure control plan regarding the procedures performed by the employees in their respective work areas or departments.<sup>6</sup> Examples of effective ways to involve employees may include meetings with employees in affected units and establishment of a committee of non-management and management employees to review the plan and any concerns brought forward by employees. An obvious example of ineffective involvement would be a hospital updating a plan, such as preparing specific procedures for Ebola patients, without requesting and considering employee input.

Employees must be able to communicate their health and safety concerns without fear of reprisal.<sup>7</sup> Hospitals must let an employee know that his or her concern was investigated and must provide the results of the investigation.

## 2. Required content of written plans

Written plans to minimize or eliminate employee exposure to the Ebola virus ("exposure control plans") must describe the following:

- Identification of all of the operations, areas, tasks, and job classifications where employees are at risk of exposure to Ebola patients or infectious materials.<sup>8</sup>

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<sup>3</sup> 8 CCR § 5193(c)(1)(C) and (F) and 8 CCR § 5199(d)(4)

<sup>4</sup> 8 CCR § 5193(c)(1)(D) and 8 CCR § 5199(d)(3)

<sup>5</sup> Hospitals must provide the same level of employee protection when a patient is either a suspected Ebola case or confirmed Ebola case. In the current ATD standard, the definition of "suspected case" is stated as either of the following: "(1) A person whom a health care provider believes, after weighing signs, symptoms, and/or laboratory evidence, to probably have a particular disease or condition listed in [Appendix A](#); (2) A person who is considered a probable case, or an epidemiologically linked case, or who has supportive laboratory findings under the most recent communicable disease surveillance case definition established by CDC Mortality Weekly Report (MMWR) or its supplements as applied to a particular disease or condition listed in [Appendix A](#)." [8 CCR § 5199(b)]

<sup>6</sup> 8 CCR § 5193(c)(1)(B) and 8 CCR § 5199(d)(2)(P)

<sup>7</sup> 8 CCR § 3203(a)(3).

<sup>8</sup> 8 CCR § 5193(c)(1)(b) and (c)(3) and 8 § CCR 5199(d)(1). In addition to inpatient care, operations identified in exposure control plans may include, but not necessarily be limited to, emergency departments, admission services, labor and delivery, outpatient services, isolation units for suspected and confirmed Ebola patients, laboratories,

- Engineering controls, such as separate rooms for patients, plastic barriers, decontamination facilities, hygiene facilities, and in some cases special isolation rooms (airborne infection isolation) with dedicated ventilation systems.
- Work practice controls affecting how tasks and operations are to be performed in all stages of workflow, including pre-hospital notification, intake, screening, evaluation, treatment, movement, transfer, and discharge. This includes procedures for controlling exposures during transport of the patient, precautions to be taken during aerosol-generating (“high hazard”) procedures such as intubation, and precautions necessary during decontamination of the work site and equipment and during handling and disposal of waste.
- Personal protective equipment (PPE) including respirators, in situations where engineering and work practice controls do not provide sufficient protection,<sup>9</sup> and methods for determining the level of respiratory protection required (discussed in section D2, below).
- Medical services<sup>10</sup> and continuation of an employee’s pay if the employee must be excluded from the worksite during a potential incubation period following a workplace exposure.<sup>11</sup>
- Training on the hazards covered by the regulations and the employer’s methods for preventing employee exposure, with an opportunity for interactive questions and answers.<sup>12</sup>

**PLANNING FOR EMERGENCY DEPARTMENTS:**

*Employers must implement measures to protect employees in emergency departments who may come into contact with patients known or suspected to have Ebola virus disease. These measures should include procedures and protocols to identify and isolate such patients quickly and transfer the patients to other parts of the hospital or to other hospitals that are better equipped to care for such patients. Methods to identify “suspected cases” (as defined in footnote 5) should follow criteria used by the California Department of Public Health (CDPH). Similarly, methods to transfer patients suspected to have Ebola should be developed in coordination with the state or local health officer and the local emergency medical services agency. All procedures should be designed to minimize employee contact.*

*If isolation and transfer procedures and protocols, along with engineering and work practice controls, are insufficient to prevent employee exposure, the employer must ensure that employees at risk of exposure use appropriate PPE including respiratory protection, as discussed in section D, below.*

*Hospitals must have procedures in place for decontaminating areas in the emergency department occupied by a patient later confirmed to have Ebola virus disease (discussed in section D3, below) and must offer medical services to exposed, unprotected employees (discussed in section E, below).*

morgues, and waste disposal. [Under the ATD standard, laboratory operations without direct patient contact may have a biosafety plan in lieu of an exposure control plan. Biosafety plan requirements are in 8 CCR § 5199(f).]

<sup>9</sup> 8 CCR § 5193(c)(1)(B)2 and 8 CCR § 5199(d)(2)(E)

<sup>10</sup> 8 CCR § 5193(f) and 8 CCR § 5199(d)(2)(H) and (h)

<sup>11</sup> 8 CCR § 5199(h)(8)

<sup>12</sup> 8 CCR § 5193(g) and 8 CCR § 5199(i)

## **D. Personal Protective Equipment Requirements**

Patients with Ebola release infectious body fluids through, for example, sweating, coughing, vomiting, excretion, and bleeding. Employees providing care for a suspected or confirmed Ebola patient, employees cleaning contaminated areas, and employees assisting other employees with the removal (doffing) of their contaminated personal protective equipment (PPE) can become infected with the virus if infectious body fluids come in contact with broken skin or with mucous membranes of the eyes, nose, or mouth, or if the employee inhales small liquid particles of infectious body fluids released into the employee's breathing zone. When engineering and work practice controls (described in section C, above) are insufficient to prevent employee contact with the Ebola virus, such as when an employee enters a patient's room, hospital employers must ensure that employees use PPE.<sup>13</sup>

This guidance document describes a PPE ensemble that creates an additional workload on the employee's body. Under the Injury and Illness Prevention Program (IIPP) standard, hospital employers must establish work regimens allowing employees sufficient time and opportunity to recover, and they must monitor the health status of employees using the PPE ensemble.

### **1. Protection of body, hands, eyes, nose, and mouth**

Because Ebola patients can release large quantities of infectious fluids, employees who provide care for suspected or confirmed Ebola patients must use PPE that covers all surfaces of the body so that absolutely no skin is exposed:

- A body covering must be used. Its closure must not allow fluids to penetrate. For employees working in the patient's room, the body covering must be a coverall.
- The head and neck must be protected, including coverings for the eyes, mouth, nose, and skin. The hair must be completely enclosed.
- Gloves must be used to protect the hands, and two or more pairs must be used to facilitate the doffing of PPE and decontamination, discussed below. The US Centers for Disease Control and Prevention (CDC) recommends using two pairs of single-use (disposable) nitrile examination gloves with extended cuffs on the outer gloves.<sup>14</sup>
- Fluid-protective boots or coverings for the feet and lower legs must be used and must not create a slipping hazard. To provide continuous fluid protection, undersocks or underboots that are integrated into the coverall, or protection that is equivalent, must be provided.

Employees who assist other employees with the doffing of contaminated or potentially contaminated PPE must use their own head-to-toe PPE including a respirator approved by the National Institute for Occupational Safety and Health (NIOSH). If there is a possibility that the employee will assist with the doffing of contaminated PPE, the employee must be provided the same high level of protection as the employee who is doffing PPE.

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<sup>13</sup> 8 CCR § 5193(d)(4)(A)

<sup>14</sup> <http://www.cdc.gov/vhf/ebola/hcp/procedures-for-ppe.html>

The PPE that hospital employers provide must meet the following criteria:<sup>15</sup>

- Body fluids cannot pass through the PPE and reach the employee's work clothes, street clothes, undergarments, skin, eyes, mouth, or other mucous membranes.
- The design, strength, fit, and durability of the PPE are sufficient to provide adequate protection. Seams, zippers, and other fastenings are protected against passage of fluids.<sup>16</sup>
- The PPE is reasonably comfortable and does not unduly encumber the movements the employee must make to perform his or her work properly.<sup>17</sup>
- Each piece must be compatible with the rest of the PPE ensemble during use, removal (doffing), and decontamination.

If the employee's clothing does become contaminated despite the use of PPE, the employer must make arrangements to dispose of the clothing. Contaminated clothing must not be taken home to be washed, as it is a potential source of exposure to the employee and other household members.

## 2. Respiratory protection

Patients with Ebola may release small liquid particles of infectious body fluids (aerosols) through coughing or vomiting. In addition, aerosols may be released during an "aerosol-generating" procedure performed on an Ebola patient, such as intubation or suctioning of the airway. Aerosols may also be generated during cleaning of Ebola-contaminated surfaces and equipment and during doffing of contaminated PPE. The release of aerosols containing the Ebola virus creates respiratory hazards for employees in the immediate vicinity.

Basic principles of respiratory protection dictate that employers select respirators based on the respiratory hazard to which the employees are exposed, as well as workplace and user factors that affect respirator performance and reliability.<sup>18</sup> Employers must regularly consult with employees on the effectiveness of the employer's respiratory protection program.<sup>19</sup> Respirators must be approved by NIOSH.<sup>20</sup> Surgical masks are not respirators and may not be used for this purpose.<sup>21</sup>

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<sup>15</sup> 8 CCR § 5193(d)(4)(A). To prevent penetration of blood or other potentially infectious materials, the PPE must meet or exceed the following testing standards published by the American Society for Testing and Materials (ASTM): F1670 (blood or bloody fluid penetration) and F1671 (bloodborne pathogens penetration). [8 CCR § 3380(a)]

<sup>16</sup> 8 CCR § 3380(e) and 8 CCR § 5193(d)(4)(A).

<sup>17</sup> 8 CCR § 3380(e)

<sup>18</sup> 8 CCR § 5144(d)(1)(A)

<sup>19</sup> 8 CCR § 5144(l)(2)

<sup>20</sup> 8 CCR § 5144(d)(1)(B) and § 5199(g)(1)

<sup>21</sup> 8 CCR § 5193(d)(4)(H)2

To protect employees against exposure to aerosols containing the Ebola virus, hospital employers must select respirators according to criteria in the ATD standard. This standard is unique to California.<sup>22</sup> The level of respiratory protection employers must provide under the ATD standard depends on whether the employer can reasonably determine there is *no risk* that the employee will be exposed to an aerosol-generating procedure performed on an Ebola patient or be exposed to another type of aerosol-generating activity.<sup>23</sup>

- During aerosol-generating procedures performed on a hospitalized patient with known or suspected Ebola virus disease, Ebola is considered under the ATD standard to be an “airborne infectious disease.”<sup>24</sup> Employees must be provided battery-powered air-purifying respirators (PAPRs) during any aerosol-generating procedure<sup>25</sup> performed on a patient with an airborne infectious disease (as defined in the ATD standard), and therefore must be provided PAPRs during an aerosol-generating procedure performed on a hospitalized, suspected or confirmed Ebola patient. Furthermore, because aerosol-generating procedures can happen unexpectedly,<sup>26</sup> employees must be provided PAPRs at all times when caring for or working near a suspected or confirmed Ebola patient for whom there is a

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<sup>22</sup> The ATD standard requires higher levels of respiratory protection than those recommended by the US Centers for Disease Control and Prevention (CDC). For employees directly interacting with a hospitalized (i.e., admitted as an inpatient), suspected or confirmed Ebola patient for whom there is a risk that an aerosol-generating procedure will occur, the CDC recommends either battery-powered air-purifying respirators (PAPRs) or N95 or higher respirators. By contrast, the ATD standard requires PAPRs. (For a discussion of what hospitals can do in the face of shortages of required PAPRs, see “Planning of Alternatives” on page 10.)

<sup>23</sup> The US Centers for Disease Control and Prevention (CDC) has identified that patients with the following symptoms may unexpectedly require invasive or aerosol-generating procedures, or may otherwise generate aerosols: bleeding, vomiting, copious diarrhea, or other clinical conditions that warrant the procedures. [CDC, [“Identify, Isolate, Inform: Emergency Department Evaluation and Management for Patients Who Present with Possible Ebola Virus Disease,”](#) last updated on October 27, 2014, as of the writing of this document] In addition, a patient who is coughing, sneezing, feeling nauseated to the point of possibly vomiting, or showing a general worsening of symptoms may also generate aerosols or require aerosol-generating procedures.

<sup>24</sup> “Airborne infectious diseases” are defined as aerosol transmissible diseases transmitted through dissemination of small particles containing the disease agent for which the US Centers for Disease Control and Prevention (CDC) or the California Department of Public Health (CDPH) recommends airborne infection isolation. [8 CCR § 5199(b) and Appendix A] The CDC recommends airborne infection isolation for Ebola when aerosol-generating procedures are conducted on hospitalized patients (i.e., those admitted as inpatients) with known or suspected Ebola virus disease. [CDC, [“Infection Prevention and Control Recommendations for Hospitalized Patients with Known or Suspected Ebola Virus Disease in US Hospitals,”](#) last updated on November 2, 2014, as of the writing of this document] The CDPH recommends airborne infection isolation for patients with suspected or confirmed Ebola virus disease in the inpatient hospital setting. [[“CDPH Guidance on Personal Protective Equipment to Be Used by Healthcare Workers during Management of Patients with Ebola Virus Disease \(EVD\) in California Hospitals,”](#) November 6, 2014]

<sup>25</sup> Aerosol-generating procedures are “high hazard procedures.” [8 CCR § 5199(b)] For employees who perform high hazard procedures on airborne infectious disease cases or suspected cases, employers must provide PAPRs with HEPA filters, or a respirator providing equivalent or greater protection, unless the employer determines that this would interfere with the successful performance of the required task or tasks. [8 CCR § 5199(g)(3)(B)]

<sup>26</sup> US Centers for Disease Control and Prevention (CDC), [“Guidance on Personal Protective Equipment to Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On \(Donning\) and Removing \(Doffing\),”](#) current as of October 20, 2014, as of the writing of this document

risk that an aerosol-generating procedure will occur.<sup>27</sup> (This requirement applies to employees providing care for or moving the patient and all employees working in the patient's room.) To protect all areas of the face, head, neck, and upper torso, the PAPRs must include a full cowl or hood. (Even if the employer reasonably determines there is no risk that employee exposure to an aerosol-generating procedure will occur, employees caring for or working near a hospitalized, suspected or confirmed Ebola patient must still be provided respirators [N95 or higher], until it is determined the patient does not have Ebola.)

- Similarly, because infectious aerosols can also be generated when employees clean Ebola-contaminated surfaces or equipment that have not been sterilized or disinfected, employees involved in these operations must also be provided PAPRs with a full cowl or hood.
- Employees will be required to assist other employees in the doffing of contaminated or potentially contaminated PPE after those employees have provided care for the patient or worked in the patient's room. (Doffing is further discussed in section D3, below.) Hospital employers must provide the same level of protection to the "assisting" employees as that provided to the employees who are doffing.

In selecting the appropriate respirators to use, hospitals must evaluate every PPE ensemble to determine whether any of the individual items used compromises the protection provided by other items, for example, whether a face shield interferes with a filtering facepiece respirator or whether the respirator interferes with correct placement of the facepiece. If filtering facepiece respirators are used, they must not allow fluids to penetrate. (These respirators are labeled as "surgical" N95s, indicating that they have been cleared by the Food and Drug Administration as well as NIOSH.<sup>28</sup>) Consideration must also be given to the ability to disinfect or dispose of the respirator.

Whatever respirators are selected, they must be provided as part of a respiratory protection program,<sup>29</sup> which must include: (1) a written plan, (2) medical evaluations of employees (described in section F, below), (3) fit testing for tight-fitting respirators (including N95s), and (4) training for respirator users. Employees must be given the opportunity to practice wearing the respirator and be instructed on how to avoid contaminating the interior of the respirator. Hospitals must have an effective maintenance program to keep the batteries of PAPR units charged and available.

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<sup>27</sup> PAPRs provide cooling and defogging, decrease the work of breathing, and avoid the risk seen with tight-fitting respirators that the employee will remove the filtering facepiece periodically in order to breathe more easily. In contrast to PAPRs, negative pressure air-purifying respirators may create a physiological burden on the employee. [8 CCR § 5144(e)(6)(B)]

<sup>28</sup> The US Centers for Disease Control and Prevention (CDC) notes that if N95 respirators are used instead of PAPRs, careful observation is required to ensure that employees are not inadvertently touching their faces under the face shield during patient care. [CDC, "[Guidance on Personal Protective Equipment to Be Used by Healthcare Workers During Management of Patients with Ebola Virus Disease in U.S. Hospitals, Including Procedures for Putting On \(Donning\) and Removing \(Doffing\)](#)," current as of October 20, 2014, as of the writing of this document]

<sup>29</sup> 8 CCR § 5144(c)(1)

**PLANNING OF ALTERNATIVES:**

*Under the ATD standard, hospitals in California are already required to provide PAPRs to employees performing aerosol-generating procedures on patients known or suspected to have an airborne infectious disease, such as active pulmonary tuberculosis.<sup>30</sup> Hospitals that are preparing to admit patients who are suspected or known to have Ebola virus disease must procure additional PAPRs with full hoods or cowls unless they can demonstrate that this equipment is not available through commercial supply chains or through governmental or other stockpiles. If the equipment is not available, hospitals must provide employees PAPRs with loose-fitting facepieces.<sup>31</sup> Use of the smaller heading coverings with this type of PAPR will require additional PPE to cover exposed areas of the head, neck, and torso. If insufficient numbers of either kind of PAPR are available to protect employees at risk of exposure to the Ebola virus, hospitals should work with state and local health officers to solve the problem, either by arranging for immediate help to obtain the required PPE or by arranging for suspected or confirmed Ebola patients to be transported to hospitals that are sufficiently equipped.*

**3. Donning, doffing, and decontamination**

Employers must develop effective procedures for putting on (donning) and taking off (doffing) personal PPE including respirators, as well as for decontamination.<sup>32</sup> The specific procedures will depend on the specific PPE ensemble, and the available facilities. PPE ensembles must be chosen so that components can be safely disposed of or decontaminated if reusable. Several detailed videos are available online, for example, two videos produced by the University of Nebraska showing proper donning and doffing:

- Donning: <http://www.youtube.com/watch?v=T5knZceQ1xA>
- Doffing: <http://www.youtube.com/watch?v=ls69Tib1PjU>.

Because donning head-to-toe PPE takes time, the employer should ensure that sufficient numbers of other personnel wearing PPE are available in the patient room to care for the patient. For example, sufficient numbers of trained employees must be present to safely perform patient lifts, transfers, repositioning and mobilization,<sup>33</sup> as well as other medical procedures. The Cal/OSHA Respiratory Protection and Bloodborne Pathogens (BBP) standards require that if there is a breach in the PPE or respirator, the employee should immediately leave the area, and remove the equipment.<sup>34</sup> Without a second person available in the room, this could result in an unacceptable gap in patient care.

<sup>30</sup> 8 CCR § 5199(g)(3)(B)

<sup>31</sup> PAPRs with loose-fitting facepieces decrease the concentration of aerosols in the employee’s breathing zone by a factor of at least 25 (called the “assigned protection factor”). PAPRs with a full cowl or hood have an assigned protection factor of either 25 or 1,000, depending on whether the manufacturer provided evidence demonstrating a reduction of concentration of aerosols by a factor of 1,000 or greater. In contrast, N95 filtering facepiece respirators have an assigned protection factor of 10. [8 CCR § 5144(d)(3)(A), Table 1]

<sup>32</sup> 8 CCR § 3380(f)(4)(C), 8 CCR § 5144(k)(1)(D), 8 CCR § 5193(d)(4)(F), and 8 CCR § 5199(e)(2)

<sup>33</sup> 8 CCR § 5120

<sup>34</sup> 8 CCR § 5144(g)(2)(B) and 8 CCR § 5193(d)(4)(F)

To avoid exposing employees to infectious materials, hospitals must designate three distinct areas: (1) a clean area for donning clean PPE, (2) the patient care area, and (3) a decontamination area where an employee can progressively remove the PPE. Hospitals must also provide readily accessible hand washing facilities or, if provision of hand washing facilities is not feasible, an antiseptic hand cleaner with towels or antiseptic towelettes.<sup>35</sup> Hands must be washed after the final pair of gloves is removed.<sup>36</sup> In the event of direct contact with blood or other potentially infectious materials, hands and any other skin must be washed with soap and water, or mucous membranes flushed with water, as soon as possible.<sup>37</sup> Contaminated scrubs or other garments worn under PPE must not be worn into any other area of the facility or taken out of the facility.<sup>38</sup> The hospital must take steps to ensure that only authorized personnel enter the area.

Hospitals must fully train and supervise employees with the donning, doffing, and use of PPE (as described in section F, below). The donning and doffing of full body protection requires assistance. Employees assisting in removing contaminated or potentially contaminated PPE must also use their own PPE, including a respirator (discussed in sections D1 and D2, above).

## **E. Medical Services and Precautionary Removal Protection**

### **1. Medical services**

The Bloodborne Pathogens (BBP) and Aerosol Transmissible Diseases (ATD) standards require hospitals to provide certain medical services to employees, such as vaccinations, respirator examinations, and post-exposure follow-up. In addition, all employees who will use respirators must be given a medical evaluation to determine whether the employee can safely use a specific type of respirator under the conditions at the worksite.<sup>39</sup> An employee who in the physician's opinion cannot use a tight-fitting air-purifying respirator as part of a personal protective equipment (PPE) ensemble must be provided with a battery-powered, air-purifying respirator (PAPR) if the physician approves its use.<sup>40</sup> The US Centers for Disease Control and Prevention (CDC) and the California Department of Public Health (CDPH) have also recommended monitoring the medical condition of employees who are exposed to Ebola cases or infectious materials.

The BBP standard defines an "exposure incident" as follows: "a specific eye, mouth, other mucous membrane, non-intact skin, or parenteral contact with blood or other potentially infectious materials that results from the performance of an employee's duties."<sup>41</sup> Under the concept of "universal precautions," all human blood and certain other body fluids are to be regarded as infectious. An employee who

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<sup>35</sup> 8 CCR § 5193(d)(3)(I)

<sup>36</sup> 8 CCR § 5193(d)(3)(I)

<sup>37</sup> 8 CCR § 5193(d)(3)(I)

<sup>38</sup> 8 CCR § 5193(d)(4)(F)

<sup>39</sup> 8 CCR § 5144(e)

<sup>40</sup> 8 CCR § 5144(e)(6)(A)

<sup>41</sup> 8 CCR § 5193(b)

experiences an exposure incident must be sent to a physician or other licensed health care provider (PLHCP) for evaluation and medical follow-up, which may include testing and prophylaxis (preventive measures that may include vaccinations or medications).<sup>42</sup> All medical services under the BBP standard must follow recommendations of the CDC. Current CDC guidance for monitoring and management of potentially exposed personnel is contained in “Infection Prevention and Control Recommendations for Hospitalized Patients with Known or Suspected Ebola Virus Disease in U.S. Hospitals,” last updated on November 2, 2014, as of the writing of this document.<sup>43</sup>

The ATD standard further requires employers to follow public health guidelines, which include recommendations of the CDPH and the local health department, as well as the CDC. If a health care provider or the employer of a health care provider (such as a hospital) determines that a person is a suspect or confirmed Ebola case, the case must be reported to the local health officer, as required by the ATD standard.<sup>44</sup> The employer in the facility that originates the report must also determine from information available in its records whether employees of any other employers (such as emergency medical services) had a potential exposure and must notify those employers.<sup>45</sup> The employer is also required to determine which of its employees may have been exposed to the Ebola case. The employer must list the names of all employees who may have been exposed and determine which of those employees are not required to be included in post-exposure follow-up.<sup>46</sup> The person making that determination must explain in writing the basis for the decision.

All exposed employees must be sent to a PLHCP knowledgeable about the specific disease. The ATD standard includes specific requirements for information to be provided to the PLHCP and specifies information that the PLHCP must provide to the employer by the PLHCP while still maintaining medical confidentiality.<sup>47</sup>

## **2. Precautionary removal protection**

As part of the medical follow-up for an Ebola or other ATD exposure, the PLCHP must determine whether the employee may be infectious and should thus be removed from the employee’s regular work assignment during an incubation period (precautionary removal).<sup>48</sup> If the PLHCP or local health officer makes such a recommendation, the employer may provide alternative work (if permitted by the PLHCP or local health officer) or may place the employee on employer-paid leave. The employee’s earnings, seniority, and all other rights and benefits must be maintained during that period, and the employee restored to his or her normal position when the period is over.<sup>49</sup> This period ends either when the potential

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<sup>42</sup> 8 CCR § 5193(f)(3)

<sup>43</sup> <http://www.cdc.gov/vhf/ebola/hcp/infection-prevention-and-control-recommendations.html>

<sup>44</sup> 8 CCR § 5199(h)(6)(A)

<sup>45</sup> 8 CCR § 5199(h)(6)(B)

<sup>46</sup> 8 CCR § 5199(h)(6)(C). An employee can only be excluded from follow-up if the person conducting the analysis determines the employee did not have a significant exposure, or if a PLHCP has determined that the employee is immune to the disease.

<sup>47</sup> 8 CCR § 5199(h)(7)(A) and (B) and 8 CCR § 5199(h)(9)

<sup>48</sup> 8 CCR § 5199(h)(8)

<sup>49</sup> 8 CCR § 5199(h)(9)

incubation period ends (as determined by the PLHCP or local health officer) or if the employee is unable to work for reasons other than the precautionary removal.

## **F. Training of Employees**

Because of the possibility that the Ebola virus may spread to California, under the Bloodborne Pathogens (BBP) and Aerosol Transmissible Diseases (ATD) standards, hospitals must train employees who are at risk of exposure to the Ebola virus about routes of transmission, methods for preventing exposure, and what to do if an exposure incident occurs.<sup>50</sup> Hospitals must also train employees on how to put on, use, and take off personal protective equipment (PPE) and respirators safely.<sup>51</sup>

### **1. Required content of training**

Hospitals must train employees who may be exposed to the Ebola virus through patient contact, or through contact with infectious materials in laboratories, cleaning, facility maintenance, or waste handling and disposal operations. Employees must receive training in the following topics under the BBP standard, ATD standard, PPE standards, Respiratory Protection standard, and Injury and Illness Prevention Program (IIPP) standard:

- Plans and programs
  - Content of the BBP and ATD standards, as required by those two standards
  - The person(s) responsible for the employer's health and safety programs
  - Content of the hospital's exposure control plans, including the screening of incoming patients, appropriate patient movement and placement, establishing and maintaining patient isolation, exit and entry procedures, biohazard or medical waste labels, the handling of contaminated items, and hand washing and decontamination procedures
  - Procedures to access the hospital's written exposure control plans and its written injury and illness prevention program
  
- Employee participation
  - How employees can participate in reviewing the plans<sup>52</sup>
  - Methods for reporting hazards or other safety and health concerns to management without fear of reprisal<sup>53</sup>
  
- Ebola virus exposures
  - Routes of transmission of the Ebola virus and how to recognize symptoms and signs of infection
  - Work tasks that may pose a risk of exposure to Ebola virus
  - Control measures that will be used to prevent employee exposures

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<sup>50</sup> 8 CCR § 5193(g) and 8 CCR § 5199(i)

<sup>51</sup> 8 CCR § 3380(f)(4) and (5) and 8 CCR § 5144(k)

<sup>52</sup> 8 CCR § 5193(c)(1)(B) and (g)(2)G) and 8 CCR § 5199(d)(2)(P) and (i)(4)(D)

<sup>53</sup> 8 CCR § 3203(a)(3)

- Appropriate PPE, including respirators
  - How to safely don, adjust, use, and doff the specific PPE that the employee will use
  - Limitations of the PPE
  - What to do in the case of an equipment breach or failure, or detection of breakthrough of a contaminant
  - How to use, care for, and dispose of PPE after use
  - The possible physiological strain associated with the use of PPE ensembles, and how to recognize and report early signs and symptoms such as fatigue
  
- Medical services
  - How to notify a supervisor if an exposure incident occurs
  - The procedure to access medical care for a medical evaluation

## **2. Training must be interactive and effective**

Training required by the standards above must be effective and must be refreshed annually after the initial training. Additional training must also be provided for new exposures, tasks, or controls, such as potential contact with Ebola patients. Hospitals must assure that the trained employee understands the content of the training and can correctly perform the required tasks. Employees must be given an opportunity for interactive questions and answers with the person conducting training on the BBP and ATD standards.<sup>54</sup> Hospitals must also ensure that employees can demonstrate how to put on, use, and remove PPE and respirators.<sup>55</sup> For anticipated work providing care for Ebola patients, this requires hands-on practice sessions. Employees must be fully capable of performing donning and doffing procedures before participating in patient care or other operations that may expose the employee to Ebola.

Examples of ways to provide effective training may include in-person sessions with trainers who can answer all questions about the hospital's exposure control plan. These sessions would allow employees to practice using PPE until they show they can perform each step, including putting on, adjusting, wearing, and taking off the equipment. In contrast, training that uses only printed materials or computer-based learning, without an opportunity for interaction between trainer and trainees, or without an opportunity for hands-on practice in donning, using, and doffing of PPE, would not satisfy Cal/OSHA requirements for training.

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<sup>54</sup> 8 CCR § 5193(g)(2)(G) and 8 CCR § 5199(i)(5)

<sup>55</sup> 8 CCR § 3380(f)(5) and 8 CCR § 5144(k)(1)