Aerosol Transmissible Diseases (ATD): Information for Employers of Contract and Temporary Employees Providing Clinical Services to Kaiser Permanente Members

Provided by:
National Environmental, Health and Safety
NCAL Regional Infection Prevention
NCAL Employee Health Services
SCAL Regional Infection Prevention
SCAL Employee Health Services

Introduction – ATD Standard

The California Occupational Health and Safety Division (Cal/OSHA) Aerosol Transmissible Diseases (ATD) Standard, 8 CCR 5199, requires that employers "provide information about infectious disease hazards to any contractor who provides temporary or contract employees who may be reasonably anticipated to have occupational exposure so that the contractors can institute precautions to protect their employees."

The following slides contain information regarding the aerosol transmissible disease hazards that may be encountered in Kaiser Permanente facilities and other patient care settings.

Please note that this information does not constitute training that complies with all of the employee training requirements of the Cal/OSHA ATD Standard and may not apply in all work settings.

For questions regarding this content, please contact:

Lilly Kaneshige at Lilly.Kaneshige@kp.org and she will connect you with the appropriate resource.

Click here to access the Cal/OSHA ATD standard, 8 CCR 5199.

What is an ATD?

An **Aerosol Transmissible Disease** (or **ATD**) is a disease or pathogen that requires **droplet** or **airborne precautions** to prevent exposure.

- **"Droplets"** are relatively large in size (>5 microns) and generally travel short distances (less than 6 feet).
- **"Airborne particles"** are very small particles, may be solid or liquid, and include evaporated droplet residues called "droplet nuclei." These particles are so small that they can remain suspended in the air and travel long distances on air currents.

Signs and symptoms of ATDs that require further medical evaluation include:

- **Fever** with **rash**
- **Fever** with **cough**
- **Fever** with **night sweats**
- **Unintended weight loss**
- **Headache** or **neck stiffness** or **sensitivity to light**
- **Fatigue**

Modes of transmission

Modes of Transmission (2 Types):

1. **Droplet ATDs** are spread by large droplets containing infectious microorganisms and are generated when an infected person talks, coughs or sneezes. Droplets travel short distances, generally less than 6 feet (2 meters). Disease transmission can occur when these droplets enter the eyes, nose or mouth of a susceptible person. Note that a person might also get infected by touching a surface or object that has microorganisms on it and then touching their eyes, mouth or nose.

   Examples: Diphtheria, Mumps, Pertussis, Rubella, Influenza, Meningitis, Ebola

2. **Airborne ATDs** are spread by very small infectious particles generated when a person exhales (e.g., breathes, speaks, coughs, sneezes). These small particles can remain suspended in the air and travel longer distances (greater than 6 feet) on air currents. Disease transmission can occur when these small infectious particles are inhaled by a susceptible person.

   Examples: Chicken Pox, Avian Influenza, Measles, Tuberculosis, COVID-19, novel or unknown pathogens (must treat as airborne until they are further characterized)

Example of an Airborne Infectious Disease - Tuberculosis

TB (Tuberculosis) is a contagious airborne disease caused by the organism known as *Mycobacterium tuberculosis*. TB is spread from person to person by a germ carried on tiny particles in the air (droplet nuclei) when someone with untreated, active TB coughs, sneezes or talks. It can infect any part of the body, but the lungs are the most common site of infection. A respirator is required when providing care to a suspected or confirmed TB patient.

- Anyone exposed to M. tuberculosis can become infected. Groups of **people more likely to become infected with TB include**:
  - Persons with HIV
  - Residents of long-term care facilities
  - Persons who abuse drugs or alcohol
  - Foreign-born persons from high TB prevalence areas (such as Asia, Africa, Russia, Eastern Europe and Latin America)
  - Medically underserved low-income populations.
- Health care workers who provide services to high-risk groups are themselves considered to be at high risk for contracting TB.
- **Signs and symptoms** of TB infection include:

Productive, persistent cough for more than 3 weeks	Loss of appetite
Fever	Unexplained weight loss
Weakness	Night sweats
Fatigue	Bloody sputum

Example of a Droplet Disease with partial airborne precautions - Influenza

Influenza (flu) is a contagious respiratory illness caused by influenza viruses that infect the nose, throat, and lungs. It can cause mild to severe illness, and at times can lead to death. The best way to prevent the flu is by getting a flu vaccine each year.

- Health care workers who provide services to patients with influenza are considered to be at high risk for contracting Influenza
- Most experts believe that flu viruses spread mainly by droplets made when people with flu cough, sneeze or talk. Less often, a person might also get flu by touching a surface or object that has flu virus on it and then touching their own mouth, eyes or nose.
- Based on CDC and CA Department of Public Health (CDPH) recommendations, staff and physicians should wear an N95 or more protective respirator when performing aerosol-generating procedures on suspected or confirmed influenza patients. An airborne infection isolation room should also be used when feasible.
- Most healthy adults may be able to infect others beginning one day before symptoms develop and up to 5 to 7 days after becoming sick
- **Signs and symptoms** of influenza include:

Fever or feeling feverish/chills	Headache
Cough	Fatigue
Sore throat	Some people may have vomiting and diarrhea, though this is more common in children than adults
Muscle or body aches	

Example of a Droplet Disease with full airborne precautions - Ebola

Ebola Virus Disease (EVD) is an infectious disease caused by the Ebola virus. It is classified as a viral hemorrhagic fever (VHF) because of the fever and abnormal bleeding. Ebola is feared because of its high mortality. Although Ebola is a Droplet Disease, airborne infection isolation and respirator use are required for all patient care to reduce risk of transmission.

Ebola virus is transmitted through direct contact of the eyes, nose, mouth or non-intact skin with:

- The blood or body fluids of an infected symptomatic person or one who has died from EVD (body fluids include but are not limited to urine, saliva, sweat, feces, vomit, breast milk and semen);
- Objects (like needles and syringes) that have been contaminated with blood or body fluid.

Symptoms of infection from Ebola may appear 2 to 21 days after exposure to Ebola and include:

Fever	Vomiting	Diarrhea
Severe headache	Stomach pain	Weakness
Joint and muscle aches	Unexplained hemorrhage (bleeding or bruising)	

Important Considerations:

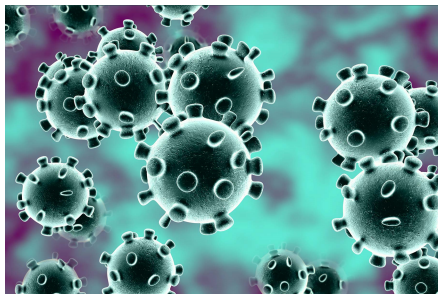
- Persons are not contagious until they develop symptoms.
- Persons at highest risk for EVD include healthcare workers and family and friends in close contact with infected patients.
- Effective isolation of patients and appropriate infection control measures applied to any suspect EVD patient should contain any potential spread.
- **Healthcare workers who will care for patients with suspected or confirmed Ebola will receive additional training.**

Coronavirus Disease 2019 (COVID-19)

COVID-19 is contagious respiratory illness caused by a coronavirus (SARS-CoV-2). COVID-19 spreads when an infected person releases droplets and very small particles that contain the virus through exhaling, talking/vocalizing, sneezing, or coughing. Physical distancing, face coverings, increased ventilation indoors, and respiratory protection decrease the spread of COVID-19 and are most effective when used in combination.

COVID-19 is spread in three main ways:

- When an infected person breathes out droplets and very small particles that contain the virus and other people breathe in these droplets and particles.
- Having these small droplets and particles that contain virus land in the eyes, nose, or mouth, especially through splashes and sprays like a cough or sneeze.
- Touching eyes, nose, or mouth with hands that have the virus on them.



If a patient is a suspected or confirmed COVID patient, wear PPE such as a gown, gloves, eye protection (goggles or a face shield), and an appropriate respirator: N95 at minimum; use a powered air-purifying respirator (PAPR/CAPR) when aerosol-generating procedures are being performed.

Signs and symptoms may appear 2-14 days after exposure to the virus. People with these symptoms or combinations of symptoms may have COVID-19. Symptoms include:

Fever or chills	Fatigue	New loss of taste or smell	Nausea or vomiting
Cough	Muscle or body aches	Sore throat	Diarrhea
Shortness of breath or difficulty breathing	Headache	Congestion or runny nose	

People who are infected but do not show symptoms can also spread the virus to others.

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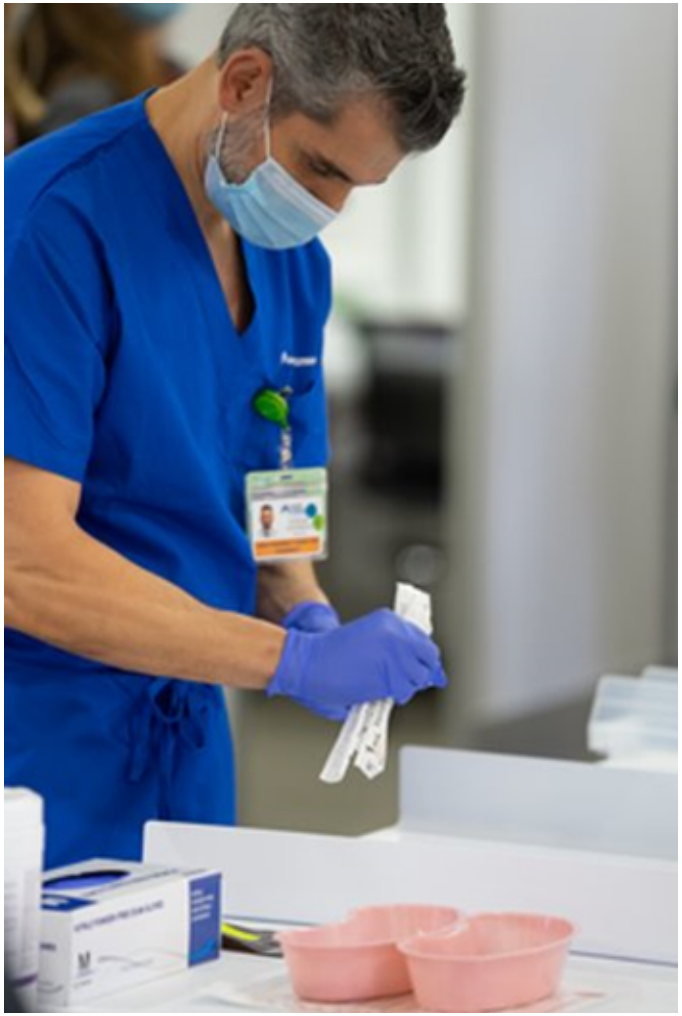
See Appendix A of the Cal/OSHA ATD Standard for the Full List of ATDs

The Cal/OSHA Aerosol Transmissible Diseases Standard (8 CCR 5199) contains a list of diseases and pathogens that are to be considered aerosol transmissible pathogens or diseases for the purpose of the Standard. Employers are required to provide the protections required by the Standard (8 CCR 5199) according to whether the disease or pathogen requires airborne infection isolation or droplet precautions as indicated by the two lists in Appendix A of the Standard. Please see Appendix A at this link: https://www.dir.ca.gov/title8/5199a.html

Activities that may result in exposure to an ATD

Exposure to an **ATD may occur when**:

- Person is in the same room or within 3-6 feet (in open space) of a suspected or confirmed ATD patient or handling patient materials that may be contaminated with infectious particles.
- Person is performing or present during a task that may generate aerosolized ATD pathogens, including tasks performed on specimens in a lab or at autopsy.
- Person enters the room of a patient on Airborne Isolation Precautions after the patient has left the room but before sufficient time has passed to ensure removal of infectious airborne contaminants from the room. Department manager should be consulted regarding required wait time.



Methods to prevent exposure – Hierarchy of Controls

ENGINEERING CONTROLS:
Example: Airborne Infection Isolation (AII) Room
Use: Isolates patients and their infectious particles from other patients and staff outside of the room.
Limitations: Doesn't protect personnel inside the room with the patient; only effective when room is functioning properly.

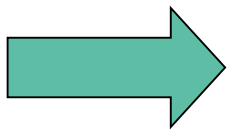
Other Examples of Engineering Controls: Sputum induction booths, hoods or other ventilated enclosures.

ADMINISTRATIVE or WORK PRACTICE CONTROLS
Examples: Patient screening and application of source control and isolation as appropriate, promotion of respiratory etiquette (signage, stations).
Use: Reduces potential for infection to spread.
Limitations: Must be followed correctly and consistently to effective.

Other Examples of Administrative/Work Practice Controls: Hand hygiene; Proper inspection, use, disinfection, maintenance and storage of reusable personal protective equipment; appropriate disposal of non-reusable personal protective equipment.

PERSONAL PROTECTIVE EQUIPMENT
Example: Respirator
Use: Protects wearer from exposure to ATD pathogens
Limitations: PPE is only effective if appropriately selected, correctly and consistently worn, and properly cleaned, stored or discarded. Contaminated PPE may be a source of infection.

The next slides contain more information on source control and PPE



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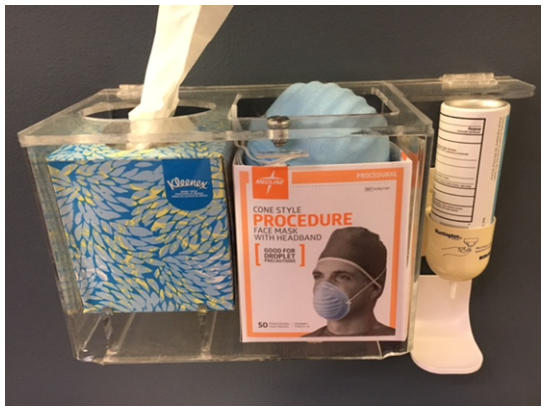
Source Control/Respiratory Etiquette – protecting others

During flu season or during pandemic conditions, you may be asked to wear a mask to cover your nose and mouth.

Visitors and patients should be educated to cover nose and mouth with a tissue when they cough or sneeze, and to perform hand hygiene after contact with respiratory secretions.

Respiratory “etiquette stations” are provided at facility entrances and public waiting areas, stocked with hand sanitizer and tissue and/or surgical masks.



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Personal Protective Equipment (PPE)

Basis for selection: PPE creates **physical barrier protection** from exposure to ATD pathogens, including facial protection for droplets and respiratory protection for airborne particles.

Examples of types of PPE:

- Gloves
- Gown or apron (impermeable)
- Surgical mask for ATDs requiring Droplet Precautions
- Respirator (N95 or Powered Air Purifying Respirators) for ATDs requiring Airborne Precautions

The department manager is responsible for maintaining an adequate supply of respirators and other protective gear to prevent exposure and for informing personnel of the proper use, location, removal, handling, cleaning, decontamination and disposal of PPE used at the worksite.

PPE: Respiratory Protection (N95)

N95: All personnel must use an N95 or equivalent respirator* with a known or suspected TB or other Airborne Infectious Disease patient, when entering the room of a patient on Airborne Isolation Precautions, or after the room was occupied by the patient and before appropriate wait time has passed, or if entering an Acid-Fast Bacilli (AFB) lab.

*Note: Such as an elastomeric half- or full-facepiece respirator or a PAPR (Powered Air-Purifying Respirator).

To correctly choose and wear an N95 respirator, contract and temporary employees must be included in a respiratory protection program which includes receiving an initial medical evaluation for respirator use, initial and annual training and initial and annual fit testing for the respirator used.

PPE: Respiratory Protection (PAPR)

Powered Air-Purifying Respirator (PAPR) is an air-purifying respirator that uses a blower to force the ambient air through an air-purifying filter to remove airborne contaminants and deliver filtered air to the user. (Note: Maxair CAPR is a type of PAPR)

In California, per the Cal/OSHA ATD Standard, personnel who participate in **high hazard procedures** performed on patients suspected or confirmed to have an Airborne Infectious Disease **must wear a PAPR** or equivalent protection during the procedure, including when the procedure is performed in a negative pressure isolation room.

High hazard procedures are aerosol-generating procedures (AGPs) performed on an individual who has a suspected or confirmed ATD, including but not limited to:

- Sputum induction
- Bronchoscopy
- Intubation/Extubation
- Open suctioning of airways
- Administration of nebulized medications (e.g., Pentamidine)
- Autopsy, clinical, surgical and laboratory procedures that may generate aerosols

The supervisor or department manager can be consulted for a list of AGPs pertinent to specific work assignments.

PAPR users must receive an initial medical evaluation for respirator use, and initial and annual training. Loose-fitting PAPRs (i.e., those with hoods or shrouds that do not form a tight seal on the face) do not require fit testing.

Decontamination and disposal of PPE

Personnel must remove any PPE before leaving the patient room/work area or AFB Lab or when the PPE becomes contaminated or torn and place it in appropriate containers for storage, washing, decontamination or disposal.

The exception is a respirator, which must be **removed after** leaving the patient's room.

Staff must consider the front of the respirator or face mask contaminated after use and dispose of the N95 respirator immediately after leaving the patient's room.

PAPRs must be decontaminated and stored according to facility and/or departmental procedures.

Individuals using PPE must always clean hands after removal of the PPE.

Vaccines for ATDs

Vaccines are a safe and an effective means of preventing some ATD transmission.

The following links will give you more information* on specific vaccines:

- Click for information about the Tetanus, Diphtheria (Td) with Pertussis (Tdap) vaccine
- Click for information about the Varicella (Var) vaccine
- Click for information about the Influenza, inactivated (IIV) vaccine
- Click for information about the Influenza, live, attenuated intranasal (LAIV) vaccine
- Click for information about the Measles, mumps, rubella (MMR) vaccine
- Click for information about the Smallpox/Monkeypox vaccine
- Click for information about the COVID-19 vaccine

* From the CDC VIS (Vaccine Information Statements), Current VISs webpage:
https://www.cdc.gov/vaccines/hcp/vis/current-vis.html

ATD Exposure Incident: Reporting and Medical Follow-up

ATD Exposure Incident:

- **An exposure incident** occurs when there is an **unprotected** airborne, eye or mucous membrane exposure to aerosols (airborne or droplet) from a patient with an ATD or to the patient's infected fluids or tissue.
- Contract and temporary employees should contact their Supervisor or Infection Prevention if they have questions concerning exposures.

Reporting an ATD Exposure Incident:

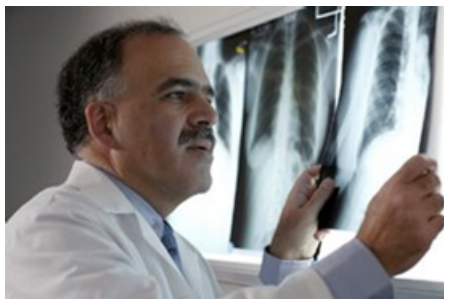
- **ALL** exposure incidents **must be reported** to the contract or temporary employee's manager/supervisor **immediately**.
- The exposed individual should **proceed as directed** for appropriate evaluation and medical follow-up.

Post-Exposure Evaluation:

A **Post-Exposure Evaluation** should be performed to determine the nature and extent of exposure, including the circumstances of the event, source patient information and other details. It may also involve testing of the exposed individual.

Medical follow-up may involve:

- Testing
- Preventive therapy: medications or vaccinations
- Other procedures if indicated (for example, a chest x-ray)



Patient Surge Situation

Community-based infectious disease or other events may create a rapid influx of patients needing assessment and/or care resulting in a **surge situation**. If contract employees are involved in responding to this surge, they will be trained as needed on procedures which may include:

1. Receiving and treating surge patients
2. How to access supplies needed for the response including PPE and respirators
3. How to coordinate with emergency response personnel from other agencies
4. Patient isolation procedures
5. Decontamination facilities and procedures
6. Surge procedures for handling of specimens, including specimens from persons who may have been contaminated from release of a biological agent.

Assigned roles may also include, but are not limited to:

- Screening
- Assisting with patient intake
- Traffic control and wayfinding
- Being a runner (e.g., moving material or information within the facility)
- Assembling equipment and PPE
- Providing support to other departments

Readiness for assigned roles will be accomplished via cross training (Just-in-Time training) in the department the individual is assigned to based on need.