Cal/OSHA’s ATD Standard
and Emergency Medical Services

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The Cal/OSHA Program

- Enforcement
- Public Safety Programs
- Consultation
- Standards Board
- Appeals Board
What is an Aerosol Transmissible Disease?

- A disease
- That is transmitted by aerosols (A gaseous suspension of fine solid or liquid particles)
Work Settings
Subsection (a)

• Person – to – Person
  – Health care, public health
    • Applies to EMT1, EMT2, Paramedic, but not first aid
  – Specific high risk environments
    • Corrections
    • Homeless shelters
    • Drug treatment programs

• Laboratories that handle ATPs-L
• First receiver for biological incidents
• Contaminated equipment or areas
Occupational Exposure

• Exposure from work activity or working conditions that is reasonably anticipated to create an elevated risk of contracting any disease caused by ATPs or ATPs-L if protective measures are not in place.

• “Elevated” means higher than what is considered ordinary for employees having direct contact with the general public outside of the facilities, service categories and operations listed in subsection (a)(1).
EMS – Examples of Occupational Exposure

• Provide medical services to persons who may be suspected or confirmed ATD cases
• Perform aerosol generating procedures, e.g. endotracheal intubation, aerosolized medications
• Provide medical transport to patients in the course of a referral
Requirements Triggered by Occupational Exposure

- Employer adopts appropriate control measures and written procedures
- Training and communication
- Respirators and PPE as necessary
- Medical services, including flu shots, other immunizations for HCWs (including EMS), TB assessment, follow-up for exposure incidents
- Participation in review of plan/procedures
- Recordkeeping
Four Types of Employers

• Hospitals, other work settings which perform (subsections d, e, g, h, i, j):
  – evaluation, diagnosis, treatment, transport, housing or management of persons requiring All
  – high hazard procedures performed on suspect or confirmed cases;
  – decontamination or management of persons contaminated as a result of a release of biological agents;
  – autopsies or embalming procedures on human cadavers potentially infected with aerosol transmissible pathogens.
Four types of Employers (cont)

• Referring: don’t provide care beyond initial to cases and suspected cases of All, and don’t do high hazard procedures on ATD patients

• Laboratories

• Conditionally exempt – dentists and outpatient medical specialty practices that don’t treat ATDs and have screening procedures
Controlling Aerosol Infection Risks

- Reducing exposure
- Source Control
- Engineering controls – closed circuit suctioning, booths, Airborne infection isolation as necessary
- Respiratory Protection and other PPE
- Sanitation, including hand hygiene (contact precautions where indicated)
- Medical services
Written ATD Exposure Control Plan
(subsection d)

• Established, implemented and maintained
  – Not on a shelf somewhere gathering dust
  – Specific to the employer’s operation

• Reviewed annually, with participation of employees (document review in writing)

• Deficiencies found to be corrected

• Plan available to employees, employee representatives, Cal/OSHA, NIOSH
ATD Exposure Control Plan Elements
(subsection d)

- Responsible person
- Job classifications with occupational exposure
- High hazard procedures
- Assignments or tasks requiring respirators/PPE
- Methods of implementation
  - Work practice and engineering controls
  - Cleaning and decon
  - PPE and respirators
  - Lab ops, if applicable
Written ATD Exposure Control Plan
(subsection d)

• Source control measures and how implemented
• Procedures to identify, temporarily isolate, and refer or transfer AirID cases or suspected cases
• Procedures to limit employee exposure to cases when not in AIIR
• Procedures to use to document decision not to transfer
• Medical services, including vaccination and exposure incidents, including procedures to evaluate exposure incidents
Written ATD Exposure Control Plan
(subsection d)

- Procedures for communication
  - To employees re infectious disease status of persons
  - With employees and other employers re exposure incidents
- Procedures to ensure supply of PPE and equip for normal ops and foreseeable emergency
- Procedures for training, record keeping
- Procedures obtaining active involvement of employees in review of the plan
- Surge procedures and first receiver from biological release, including facility stockpile and other supplies.
Control Measures
(subsection e)

- Case identification and placement
- Source control measures
- Use of feasible engineering and work practice controls
  - includes barriers and air handling systems in vehicles, when feasible
- PPE and respirators if necessary (e.g. entering AIIR)
  - Droplet referred to Guideline for Isolation Precautions
  - Airborne referred to TB Guideline
- Cleaning and decontamination
- Information to contractors
Engineering Controls

- Ambulance design
  - Partition between front and back?
  - Directional airflow
  - Ventilation of transport compartment

- Breathing circuit filters
ATD Respirator Use

- Agency must have Respiratory Protection Program (RPP)
- Risks evaluated, NIOSH approved respirators selected
- Respirator users identified, medically evaluated, fit-tested, trained
- Program to address storage, maintenance, use, user seal check, etc.
- Program evaluation, including consultation with respirator users
When EMS Respirator Use Required

[5199(g)(4)]

• Entering into room or area in use for All
• Working in an area occupied by, or is present during the performance of procedures or services for an Airborne Infectious Disease (AirID) case or suspected case, and during decontamination procedures
• Working in a residence where an AirID case or suspected case is known to be present;
• Transporting an AirID case or suspected case within the facility or in an enclosed vehicle when the patient is not masked (some exceptions apply)
Respirators and Surgical Masks
Surgical Mask

• Does not fit tightly to the face
• Is not designed to filter air inhaled by the user
• Is not fit-tested
• ASTM has test methods for bacterial and submicron particle filtration, breathing resistance, penetration by synthetic blood, and flammability
• 2004 FDA document for 510(k) submittals, references ASTM for non-NIOSH masks
## Respirators vs. Surgical Masks

Protection provided by device without fit-testing

<table>
<thead>
<tr>
<th>Type of Device</th>
<th>5&lt;sup&gt;th&lt;/sup&gt; percentile protection*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elastomeric respirator</td>
<td>7.3</td>
</tr>
<tr>
<td>Filtering Facepiece N95</td>
<td>3.3</td>
</tr>
<tr>
<td>Surgical mask</td>
<td>1.2</td>
</tr>
</tbody>
</table>

*protection is outside concentration/inside concentration

Robert B. Lawrence, Matthew G. Duling, Catherine A. Calvert and Christopher C. Coffey, 'Comparison of Performance of Three Different Types of Respiratory Protection Devices', JOEH 3:9, 465 - 474
ATD Respirator Requirements

• Minimum is N95 for exposures to AirID cases and suspected cases

• As of 9/1/2010, will require PAPR or equivalent for high hazard on AirID cases, unless will interfere with successful completion of task or tasks
  – P100 permitted for field EMS operations

• Exception permits biennial fit-testing till 2014 (Appendix G) for non-high hazard. (labs and chemical hazards not covered by exception)

• Permits modified medical questionnaire (App. B)

• Other standards also apply to emergency response and chemical hazards
Effect of Fit-testing N95

<table>
<thead>
<tr>
<th>Type</th>
<th>Geometric mean without fit-test</th>
<th>5&lt;sup&gt;th&lt;/sup&gt; %ile w/o FT</th>
<th>5&lt;sup&gt;th&lt;/sup&gt; %ile pass bitrex</th>
<th>5&lt;sup&gt;th&lt;/sup&gt; %ile pass companion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filtering facepiece</td>
<td>20.4</td>
<td>3.3</td>
<td>7.9</td>
<td>20.5</td>
</tr>
</tbody>
</table>

Source: Robert B. Lawrence, Matthew G. Duling, Catherine A. Calvert and Christopher C. Coffey, 'Comparison of Performance of Three Different Types of Respiratory Protection Devices', JOEH 3:9, 465 - 474
Powered Air-Purifying Respirators (PAPR)
Why P100 for high hazard procedures in EMS

• P100 filter is not compromised by oil mists that may be present in EMS environment
• Electrostatic filter (N95) is least efficient for aerosols somewhat smaller than challenge agent, and may therefore provide less protection
• PAPR may not be practical in EMS environment
• Recommended by IAFF
N95 vs. NaCl particle sizes

N95 vs. bacteria/fungi

Respiratory protection provided by N95 filtering facepiece respirators against airborne dust and microorganisms in agricultural farms. Lee et al. J Occ and Envir Hyg. 2:577-585, 2005.
Medical Services in the ATD Standards

• Prevention and surveillance
  – Vaccination
  – TB assessments and conversion follow-up/recording
  – Other medical surveillance for specific operations

• Post-exposure
  – Evaluation
  – Prophylaxis
  – Precautionary removal
Employer Required to Pay for Medical Services

The employer shall provide all safeguards required by this section, including provision of personal protective equipment, respirators, training, and medical services, at no cost to the employee, at a reasonable time and place for the employee, and during the employee’s working hours (5199(a)(4))
Medical Services Requirements

• Follow applicable public health guidelines [5199(h)(1)]

• By or under supervision of Physician or Other Licensed Health Care Professional (PLHCP) [5199(h)(2)]

• Ensure confidentiality of patient and employee [5199(h)(2)]

• Lab tests conducted by accredited lab [5199(h)(4)]
Vaccinations

• Seasonal influenza – all employees covered by the standard as of 8/5/09
  – Not required outside of CDC recommended time frame
• Susceptible health care and covered public health workers – as of 9/1/10
  – Mumps measles rubella (MMR)
  – Varicella
  – Tetanus, diphtheria, acellular pertussis (Tdap)
  – Influenza
Tuberculosis Surveillance

• Annual for all employees covered by the standard (except for some research labs)
• Permits any test approved by FDA and recommended by CDC, but licensed facilities may need CDPH waiver
• PLHCP to evaluate conversions, make recommendation re precautionary removal, report infectious cases to health department etc.
• Employer to record TB conversions unless not occupational
Why Annual TB Test

- Tuberculosis is a serious, life threatening disease
- Approximately 1/3 of the world’s population is infected
- California a high TB state
- TB often not diagnosed at first health care encounter
- Exposure investigations less effective the longer the time interval between infection and detection
- Treatment most effective in first year after infection
- Recommended by California TB Controllers and CDPH Occupational Health Branch
Tuberculosis Cases in California, 1980-2008

TB Incidence still well over national average; rate of decline has slowed.
RATDs

• Reportable Aerosol Transmissible Disease
  – Reportable under California Public Health Regulations (Title 17, Section 2500)
  – Listed in ATD Standard, App. A
  – Includes “unusual disease” for which CDPH requires a report
  – Triggers requirements for investigation of exposure incidents (Subsections (h)(6) through (h)(9))
Exposure Incident reports

• Diagnosing health care provider or HCP’s employer reports RATD to local health officer (LHO)

• Employer to determine from its records other employers whose employees may have had contact with case and notify within reasonable time frame for specific disease, and no longer than 72 hours past report to LHO
  – E.g. Ambulance, paramedics, EMTs, referring physician’s office or clinic
Exposure Analysis

• Each employer conducts analysis of exposure scenario within timeframe reasonable for specific disease and no longer than 72 hours after report to LHO or receipt of notification.

Record:
– name and employee identifier of each employee included in analysis
– basis for determining that an employee doesn’t need to be referred for medical follow-up
– Person performing exposure analysis and PLHCP consulted re immunity
Exclusion from Follow-Up

• PLHCP determined that employee not susceptible to disease
  – Susceptibility to be determined in accordance with applicable public health guideline

• Employee did not have “significant exposure”
  – “An exposure to a source of ATPs or ATPs-L in which the circumstances of the exposure make the transmission of a disease sufficiently likely that the employee requires further evaluation by a PLHCP.”
Exposure Incident Medical Follow-Up

- Within reasonable time frame for disease and no more than 96 hours after notified of exposure
  - Notify all employees with significant exposures
  - As soon as feasible, refer to medical provider who is knowledgeable about the specific disease
Medical Services – Alternate Provider

When an employer is also acting as the evaluating health care professional, the employer shall advise the employee following an exposure incident that the employee may refuse to consent to vaccination, post-exposure evaluation and follow-up from the employer-health care professional. When consent is refused, the employer immediately shall make available a confidential vaccination, medical evaluation or follow-up from a PLHCP other than the exposed employee's employer.
Exposure Incident Medical Follow-up (2)

• PLHCP to provide vaccination, prophylaxis and treatment
• Test isolate for drug susceptibility if available and indicated by public health guidelines
• Determination regarding precautionary removal
• Written opinion to employer
Precautionary Removal

• As a result of follow-up for TB conversion
• As a result of follow-up for an exposure incident
• Employee is otherwise able to work
• Physician or Local Health Officer recommends removal for infection control
• Employer must maintain employee’s pay and other benefits during period of removal
• PRP ends at end of potential infectious period or if employee becomes sick
Information Provided to the PLHCP

• Standard, Applicable Guidelines
• Info re respirators, per 5144
• Info re exposure incident
  – Employee’s duties
  – How exposure occurred
  – Available diagnostic tests for source
  – Relevant employee medical records (e.g. vaccination)
Information Provided by PLHCP

- Respirator medical evaluations, same as 5144
- TB Conversions and Exposure Incidents
  - TB or RATD test status
  - Infectivity status
  - Statement that employee has been informed of results of evaluation and offered relevant prophylaxis, vaccination or treatment
  - Statement that employee has been told about further treatment issues resulting from exposure
  - Recommendation for precautionary removal, if any
- ALL other conditions/findings to remain confidential
Neisseria meningitidis

- Gram negative aerobic bacteria
- Leading cause of bacterial meningitis
- Case-fatality rate of invasive meningococcal disease is 9-12%, even with antibiotics; up to 40 percent if meningococcemia
- Transmitted by respiratory secretions
- Up to 20 percent of survivors have permanent sequelae
- Incubation period 2-10 days
- Chemoprophylaxis recommended within 24 hours for close contacts

Suspect or confirmed case to be reported immediately to local health department (17 CCR 2500)
Employee Meningitis Cases in Alameda County

• December 3, welfare check found a patient unconscious in his home. Responding agencies: Oakland Police, Oakland Fire, American Medical Response
• Patient transported to hospital
• About a dozen people worked on the patient in the ED, including intubation
• December 4, 9:30 a.m. CSF positive for gram negative diplococci bacteria (suspect case)
  – No report to local health department at that time
• December 4, 3:30 p.m. blood positive for gram negative diplococci
  – No report to local health department at that time
Meningitis Cases in Alameda County (cont)

- December 6, 9:30 a.m. CSF final results confirm *N. meningitidis*
  - Confirmed case, no report at that time
- December 7, 2:10 p.m. reported to Alameda County, hospital may have notified AMR
  - No report to OPD or OFD
- December 8, Alameda County reported to OPD
  - December 9, OPD notifies 3 of 4 officers
- December 9, Oakland police officer sees doctor, then hospitalized
- December 10, 10:45 p.m. respiratory therapist taken unconscious by ambulance to hospital
Meningitis Cases in Alameda County (cont)

- December 11, RT department informed of employee hospitalization and ED managers start exposure investigation and prophylaxis
- December 15, hospital IC and EE health managers complete exposure analysis with radiology and respiratory therapy
What Went Wrong?

• Hospital did not immediately report suspected case on December 4
• Hospital did not immediately report confirmed case on December 6
• Hospital claims to have notified AMR on 12/7, never notified OPD or OFD
• Hospital did initiate exposure analysis until 12/11 (after employee hospitalized)
• “Some diseases, such as meningococcal disease, require prompt prophylaxis of exposed individuals to prevent disease.” (note to 5199(h)(6)(B))
Multi-Employer

• Agencies should have procedures to interface with employers who control the environment employees enter
• Employees entering other facilities should be instructed what to do if environment not safe
• EMS employees entering hospitals etc. should be aware of requirements of host facility re infection control
Training
(subsection i)

- Initial and annual
- Additional when new control measures, tasks or procedures are introduced
- Appropriate in content and vocabulary to educational level, literacy and language
- Interactive Q&A, if computer-based, provide Q&A within 24 hours
- Must be specific to workplace
Recordkeeping

Confidential medical records

- May be combined with BBP records
- Name/identifier
- Required vaccine status
- Written opinions from PLHCP
- Results of TB assessments
- Info provided to PLHCP from exposure incident
- Maintained for 30 years + duration of employment (Section 3204)
- Not disclosed without ee’s written consent or as required by law (see recordkeeping section)
Recordkeeping

- Training (maintain for 3 years)
- Implementation of ATD or Biosafety Plan
  - Annual plan review (3 years)
  - Exposure incidents (30 years, Section 3203)
  - Unavailability of vaccine, All rooms (3 years)
  - Decision not to transfer patient for medical reasons:
    - In patient record
    - Summary without patient ID maintained by Plan administrator for use in Plan review (3 years)
Recordkeeping

- Inspection, testing, maintenance of ventilation systems and other non-disposable engineering controls (5 years)
- Respiratory Protection Program
  - In accordance with 5144
  - If using exception, maintain screening record (Appendix G) for two years.
Recordkeeping

• Training, plan, records of implementation (other than individually identified medical records) available to employees and reps per 3204

• Medical records to employee, person with ee’s consent, local health officer and to DOSH and NIOSH per 3204

• All other records available to DOSH, NIOSH and local health officer
Cal/OSHA Rulemaking Process

- Pre-rulemaking activities (advisory meetings)
- Proposal goes to Standards Board staff
- Standards Board forwards it to the Office of Administrative Law for publication
- 45 day public comment period and hearing
- If there are changes, one or more 15 day notices
- Board votes on standard
- If adopted, forwards to OAL for review
Find Cal/OSHA on the Web

- ATD regulation [www.dir.ca.gov/title8/5199.html](http://www.dir.ca.gov/title8/5199.html)
- Advisory committee webpage:
  - [http://www.dir.ca.gov/dosh/DoshReg/advisory_committee.html](http://www.dir.ca.gov/dosh/DoshReg/advisory_committee.html)
- Cal/OSHA regulations:
  - [http://www.dir.ca.gov/samples/search/query.htm](http://www.dir.ca.gov/samples/search/query.htm)
- Occupational Safety and Health Standards Board [http://www.dir.ca.gov/oshsb/oshsb.html](http://www.dir.ca.gov/oshsb/oshsb.html)