

Multidrug-resistant *Acinetobacter* (MDR-A)

rev Jan 2018

BASIC EPIDEMIOLOGY

Infectious Agent

Acinetobacter are strictly aerobic Gram negative coccobacilli of the Moraxellaceae family. There are more than 25 species within the genus. *Acinetobacter* has an intrinsic resistance factor that enables them to hydrolyze carbapenem, causing resistance to carbapenems and penicillins. Multidrug-resistant. Multidrug-resistant *Acinetobacter* strains can also circumvent antibiotics by producing porins, modifying penicillin-binding proteins and producing aminoglycoside modifying enzymes.

Patients can be colonized with *Acinetobacter*, especially in tracheostomy sites or open wounds. Outbreaks of *Acinetobacter* typically occur in intensive care units and healthcare settings which house seriously ill patients. People with weakened immune systems, chronic lung disease, or diabetics may be more susceptible to infections with *Acinetobacter*. Hospitalized patients on ventilators, with prolonged stays, with open wounds, or invasive devices are at greater risk for *Acinetobacter* infections.

Transmission

Transmission can occur via direct person-to-person contact or secondary contact with contaminated environmental surfaces, medical devices, or equipment. *Acinetobacter* may survive in the environment for several days. Additionally, the hands of healthcare workers who frequently touch these objects in patient environments often become vectors of transmission. Transmission can be prevented through hand hygiene compliance, environmental cleaning, and adherence to transmission-based precautions.

Incubation Period

There is no set incubation period for exposure-to-illness onset.

Communicability

Acinetobacter is capable of surviving on inanimate surfaces for extended periods of time, from a few weeks to a month or more. Outbreaks may occur due to incomplete surface cleaning of the environment and medical instrument. *Acinetobacter* can become endemic within facilities and communities.

Clinical Illness

Healthcare-associated *Acinetobacter* such as respiratory tract infections, including ventilator associated pneumonia, catheter related urinary tract infections, bloodstream infections, and wound infections have been well documented in medical literature. There have also been reports of *Acinetobacter* meningitis, endocarditis, osteomyelitis, corneal perforation and infection associated with peritoneal dialysis. Symptoms associated with MDR-A infections generally vary based on the site that is infected (e.g., cough if in the lungs, urinary symptoms if in the bladder). Symptoms can also be generalized such as fever or chills.

DEFINITIONS

Clinical Case Definition

When found in a clinical culture MDR-A can represent an infection or colonization. There is no set clinical case definition as MDR-A can cause many types of symptoms.

Laboratory Confirmation

- *Acinetobacter* species from any body site that:
 - test non-susceptible (i.e., intermediate or resistant) to at least one of the antibiotics listed below, in at least three of the following six antimicrobial classes.

Note: no other antibiotics can meet case definition, only the one's listed in the table below.

Beta-Lactam	Aminoglycosides	Carbapenems	Fluoroquinolones	Cephalosporins	Sulbactam
Piperacillin Piperacillin/ Tazobactam	Amikacin Gentamicin Tobramycin	Imipenem Meropenem Doripenem	Ciprofloxacin Levofloxacin	Cefepime Ceftazidime	Ampicillin/ Sulbactam

Case Classification

Confirmed: *Acinetobacter* species from any body site that is laboratory confirmed.

SURVEILLANCE AND CASE INVESTIGATION

Case Investigation

Local and regional health departments will promptly address all reports of MDR-A. The investigation steps below describe the public health activities to be completed when a MDR-A is reported. Investigations and control measures are required for infection or colonization with any type of MDR-A.

Case Investigation Checklist

- The jurisdiction that conducts the investigation is according to the location where the patient tested positive for MDR-A. (E.g.; patient tested positive for MDR-A, and is in hospital in jurisdiction A, but the patient resides in jurisdiction B, jurisdiction A would conduct the investigation).
- Immediately ensure contact precautions have been implemented for anyone with MDR-A.
- Confirm that the laboratory results meet the case definition.
 - If it is unclear, call a DSHS HAI Epidemiologist for assistance.
- Ensure additional control measures are in place for cases and/or facilities. (see “specific control measures” section below)
- Review the medical records and speak to an Infection Preventionist (IP) at the healthcare facility to verify demographics, symptoms, and course of illness.
- If the patient has been discharged from the reporting healthcare facility and the receiving healthcare facility is known, the investigator ensures that the receiving healthcare facility is informed of the MDR-A case and ensures control measures are in place.
- Refer to the MDR-A Investigation form for additional questions to address.
 - The MDR-A Investigation Form is available on the DSHS Website: <http://www.dshs.texas.gov/idcu/investigation/>
- All cases of MDR-A require the investigation form to be completed.

- A paper copy of the investigation form and laboratory report is NOT required to be sent to DSHS EAIDB unless specifically asked.
- Enter all confirmed case investigations and submit a notification in NBS within 30 days of the initial report.
 - The jurisdiction that conducted the investigation enters the case in NBS.
 - The jurisdiction is entered as the jurisdiction who conducted the investigation and not the jurisdiction of residency.
 - Investigator should add a comment prior to submitting notification that jurisdiction needs to be changed to the patient's residential jurisdiction, upon case approval.
 - Once the case is reviewed and approved, the approver will update the jurisdiction to the jurisdiction of residency for aggregate reporting purposes.
 - NOTE: if a case involves multiple jurisdictions, it is the responsibility of the investigator to notify other jurisdictions of the case.
 - Labs collected and reported within six months of initial lab collection should be associated with the initial investigation.
 - Labs collected and reported after six months of an initial confirmed lab result require a new investigation every six months.

Prevention and Control Measures

Control measures for Cases

Ideally, the facility is performing control measures for the case. The investigator is communicating directly with the facility, most likely with the IP or the responsible representative over infection prevention. The investigator ensures the below control measures are addressed with reporting facilities but not all specific control measures might be necessary for all case investigations.

Specific Control Measures

- Facilities are responsible for ensuring that healthcare personnel perform hand hygiene- use alcohol-based hand rub or wash hands with soap and water before and after contact with patients and their environment.
- Ensure the patient is on contact precautions.
 - Recommend single patient rooms, if available.
 - If single rooms are not feasible, recommend cohorting like patients (ex: a patient with MDR-A and another patient with MDR-A)
 - Don (put on) gown and gloves either before or upon immediate entry into the patient's room; (note some facilities might require more personal protective equipment (PPE))
 - Doff (remove) gown, gloves and any other PPE immediately upon exiting the patient's room.
 - No recommendation currently exists for discontinuing contact precautions for MDR-A. A facility should consult with an infectious disease physician, the IP, or the provider that initiated the precautions. The facility may also call a DSHS HAI Epidemiologist for assistance.
- Reduce risk factors associated with MDRO transmission
 - Recommend evaluating the need for invasive devices on a daily basis and discontinuing when no longer necessary.
- Recommend staff cohorting when feasible
- Ensure the facility is using disposable noncritical patient-care equipment (e.g., blood pressure cuffs) or implements patient-dedicated use of such equipment. If common use of equipment for multiple patients is unavoidable, clean and disinfect such equipment with an EPA approved disinfection before use on another patient.

- Verify appropriate EPA disinfectants are being utilized to clean all surfaces and contact times are being followed.
 - Encourage more frequent cleaning of “high touch surfaces” throughout the unit and/ or facility
- Verify the facility laboratory is immediately alerting clinical staff and the infection preventionist when MDR-A is identified.
- Ensure physicians, hospital staff, patients, and visitors are educated on MDR-As

Treatment

Each case will have a unique treatment option. It is recommended that the reporting facility collaborate with a clinical pharmacist, an infectious disease physician, and/or an antibiotic stewardship resource for an individualized treatment plan.

Exclusions

Students (K-12) and daycare age children with MDR-A wound infection need to be excluded from attendance until drainage from wounds or skin and soft tissue infections is contained and maintained in a clean dry bandage; restrict from situations that could result in the infected area becoming exposed, wet, soiled, or otherwise compromised. No other exclusions apply.

MANAGING SPECIAL SITUATIONS

Outbreaks

If an outbreak is suspected, immediately notify a DSHS HAI Epidemiologist. The DSHS HAI Epidemiologist will notify central office and work with central office as needed.

Outbreak Definition

At this time there are no defined criteria for an outbreak.

REPORTING AND DATA ENTRY REQUIREMENTS

Provider, School and Child-care Facilities, and General Public Reporting Requirements

Cases of Multidrug-resistant *Acinetobacter* (MDR-A) should be reported **within 1 working day** to the local or regional health department. If jurisdiction is unclear, call a DSHS HAI Epidemiologist or Emerging and Acute Infectious Disease Branch (EAIDB) at 512-776-7676 for assistance.

Local and Regional Reporting and Follow-up Responsibilities

Local and regional health departments should:

- Promptly investigate all reported MDR-A labs.
- Ensure control measures are in place, this should occur promptly prior to transfer to another unit, healthcare facility or discharge.
- Provide education to prevent further spread of disease (see specific control measures section located in this document).
- If an electronic laboratory report (ELR) report notification is in NBS, follow-up promptly to obtain lab susceptibility report.
- Enter the confirmed case into NBS when the first occurrence is reported and create the NBS notification to DSHS on all confirmed cases of MDR-A. Complete additional case information and enter the remaining information within 30 days of initial report.
 - Please refer to the NBS Data Entry Guide for specific details on how to properly complete an NBS investigation, how to enter a laboratory report and submit a NBS notification.
- Local health departments may request assistance with the investigation of MDR-A by contacting both the DSHS Regional Lead Epidemiologist and the DSHS HAI Epidemiologists for the respective public health region (PHR).
- Because of the potential for transmission of MDR-A to vulnerable patients in healthcare settings, public health action is imperative in controlling further transmission by: instituting control measures, identifying and screening close contacts of cases that could transmit in healthcare settings, if indicated, and ensuring that the facility IP has been notified and that appropriate infection control measures are in place.

When a cluster or an outbreak is investigated, local and regional health departments should:

- Report suspected outbreaks within 24 hours of identification to the DSHS HAI Epidemiologist
- All investigation forms and other supporting documents will be shared with the DSHS HAI Epidemiologist per region specific process, examples include:
 - Fax documents securely to designated region
 - Upload documents into the Texas Public Health Information Network (Phin)
 - Upload in NBS under supplemental documentation

If labeling a case as part of an outbreak, the outbreak must be named in NBS. Outbreak names must be requested through the NEDSS (NBS) office. The staff can be reached by phone (512) 458-7111 ext. 7729 or email NEDSS@dshs.texas.gov.

DISEASE REPORTING

Purpose of Reporting and Surveillance

- To prevent transmission of infections with MDR-A in healthcare facilities and the community, by decreasing the likelihood of transmission through the investigation process.
- To improve the detection, monitoring and epidemiological characterization of MDR-A in Texas.
- To develop, implement and evaluate strategies to prevent the emergence, transmission and persistence of MDR-A.
- To conduct and support epidemiological studies to identify outbreaks and potential sources of ongoing transmission in various populations.

Reporting

1. Report all multi drug resistant *Acinetobacter* species to your local health jurisdiction **within 1 working day.**

LABORATORY PROCEDURES

Clinical laboratories are not required to submit isolates to the DSHS Laboratory at this time. To obtain confirmatory, gene sequencing or phenotypic testing, clinical laboratories should contact a reference laboratory for those services. The reference lab will give guidance on specimen collection, submission form and shipping.

Any specimen sent to the DSHS Laboratory for possible outbreak situations or molecular testing requires prior approval from a DSHS HAI epidemiologist.

UPDATES

January 2018

- Clarified Regional and local health department responsibilities and follow-up
- Introduced PHIN document upload option for multi-jurisdictional view
- Updated NEDSS email address and DSHS links
- Encouraged prompt reporting, and ELR lab follow-up