

MULTIDRUG-RESISTANT *CANDIDA AURIS* PROTOCOL

1. Introduction

Candida auris is an emerging multidrug-resistant (MDR) yeast, causing invasive healthcare-associated infections with high mortality.^[14.11] Multidrug-resistant *Candida auris* (MDR *C. auris*) is a global threat to public health and has been reported in seventeen countries on five continents since 2009^[14.7], however, there are also *C. auris* strains that do not demonstrate antifungal resistance. More than 90% of strains are fluconazole-resistant, 30-40% are resistant to amphotericin B, and 5-10% have been echinocandin resistant.^[14.9] MDR *C. auris* has caused health care–associated outbreaks.^[14.11]

This fungus can spread within health care facilities and interventions are needed to prevent transmission during this early stage of MDR *C. auris* emergence. As of May 2017, most U.S. cases of MDR *C. auris* were concentrated in chronically ill patients with long stays at high-acuity healthcare facilities.^[14.11]

Experience during outbreaks suggests that MDR *C. auris* might substantially contaminate the environment of rooms of colonized or infected patients. Transmission indirectly from equipment in contact with the case and direct contact transmission from the hands of healthcare workers (HCWs) are particular risks; therefore, there must be strict adherence to hand hygiene.^[14.4] Following appropriate IP&C practices and environmental cleaning can help prevent transmission in healthcare settings.

2. Clinical Presentation

MDR *C. auris* may cause a variety of infections similar to other *Candida spp.*, ranging from colonization to localized infections, such as otitis media and externa, to bloodstream infections and sepsis syndromes. With this wide range of infections, no single presentation can be described. The most common symptoms of invasive MDR *C. auris* infection are fever and chills that don't improve after antibiotic treatment for a suspected bacterial infection.^[14.1] Patients who have been hospitalized in a healthcare facility a long time, have a central venous catheter, or other lines or tubes entering their body, or have previously received antibiotics or antifungal medications appear to be at highest risk of infection with this yeast.^[14.8] The risk of MDR *C. auris*, in addition to the risk of other antimicrobial resistant organisms, should be considered in travellers who has been hospitalized while outside the country.^[14.7] The diagnosis is made by isolation of MDR *C. auris* from an appropriate clinical specimen.

3. Period of Communicability

Very little is known at this time regarding the period of communicability of MDR *C. auris*; however, the same principles related to other opportunistic yeast such as *C. albicans* apply to MDR *C. auris*. Patients are at risk during the period of exposure to an environment in which the pathogen is endemic.

4. Accommodation

4.1. Single Room: ^[14.11]

- Place people with MDR *C. auris* in a single room immediately upon arrival
 - Consult site Infection Control Professional or Infectious Diseases (ID) if unable to accommodate in a single room
 - **Only** cohort with another MDR *C. auris* positive patient
 - Assign a dedicated toilet (or commode), a patient sink and a dedicated hand hygiene sink and bathing facilities when possible
- Door may remain open

4.2. Bring only essential equipment and supplies into the patient room i.e., do not over-stock patient room.

4.3. Dedicate reusable non-critical patient care equipment to the patient with MDR *C. auris* for the duration of their admission when possible

4.4. Clean and disinfect reusable non-critical patient care equipment before use on another patient.

4.5. Identify all equipment and supplies and store it in a manner that prevents use by or for other patients.

5. Acute Care Clinic/Therapy/Diagnostic Settings/Emergency Room

In addition to the measures outlined in **Accommodation**, section 4, above:

- Schedule MDR *C. auris* patient as last patient of the day if possible/applicable
- Clean and disinfect room and equipment, after MDR *C. auris* patient leaves, as per **Environmental Cleaning**, section 12, below
- Admit MDR *C. auris* patient directly to a room; do not place in waiting room

6. Infection Prevention and Control Practices

6.1 Implement [Containment Precautions](#) in addition to [Routine Practices](#) in **any/all** units in which the case or suspect presents/is placed.

6.2 Notify site Infection Control Professional immediately; leave a message outside of business hours.

6.3 Consult Infectious Diseases (ID) immediately

6.4 Health Care Workers and visitors shall wear:

- gloves to enter the room or bed space
- a long sleeved gown to enter the room or bed space
- a procedure or surgical mask and eye protection if anticipating splashes or sprays (as per [Routine Practices](#))

6.5 Perform thorough hand hygiene

6.6 See the [Containment Precautions Protocol](#) for detailed information

6.7 Continue to assess patient for signs and symptoms of infections of other diseases, following usual processes. Implement appropriate [Additional Precautions](#), in addition to [Containment Precautions](#), as indicated.

Note: Additional measures may be implemented on a case by case basis based on increased transmission or risk associated with a specific case in a specific setting.

7. Flagging in Electronic Patient Record (EPR)

7.1 Patients flagged as CN AUR POS are MDR *C. auris* positive.

- Follow **Infection Prevention and Control Practices**, section 6, above until discontinued by Infectious Diseases/site Infection Control Processional (ICP) as outlined in **Discontinuation of Containment Precautions**, section 8, below

7.2 Patients flagged as CN AUR SUS are MDR *C. auris* suspects because of having contact with a MDR *C. auris* positive case and no negative cultures as outlined in **Discontinuation of Containment Precautions**, section 8, below

- Follow **Infection Prevention and Control Practices**, section 6, above

8. Discontinuation of Containment Precautions

8.1 Containment Precautions can be discontinued by Infectious Diseases/site ICP after the following requirements have been confirmed:

- For MDR *C. auris* positive patients, at least two ^[14.7, 14.13] consecutive sets of negative cultures have been obtained at least one week apart,
- For MDR *C. auris* **suspects**, one set of negative cultures has been obtained
- Patient has been off potentially effective antifungal medications during the 7 days before each specimen collection. ^[14.7]
- Cultures obtained from **all** of the following sites (see **Screening**, section 9., below for additional information):
 - Axilla and groin in a composite swab ^[14.9] (i.e., both sites with one swab)
 - Open wounds/lesions/incisions/invasive device insertion sites (e.g., central lines). Do not collect specimens from closed wounds/ lesions/ incisions
 - **All** previously positive sites (e.g., urine, sputum) ^[14.12]

9. Screening

9.1. Do not routinely screen patients for MDR *C. auris* on admission.

Notify the Microbiology Laboratory in advance of screening

9.2. Screen all roommates and bathroom-mates of patients colonized or infected with MDR *C. auris*, with **no minimum exposure time**. ^[14.6,14.9]

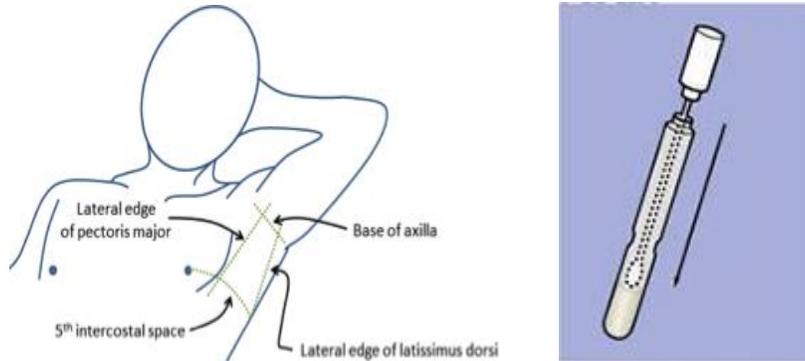
9.3. A point prevalence screen for patients on a unit where a case of MDR *C. auris* is detected may be considered by the site ICP.

9.4. Screen regardless of antifungal therapy ^[14.3]

- Consult Infection Prevention and Control for assistance interpreting results if patient on antifungal therapy

9.5. Send screening specimen(s) to the Microbiology Laboratory. Specimen collection sites include **ALL** of the following sites:

- Axilla and groin in a composite swab ^[14.9] (i.e., both sites with one swab)



- *Open* wounds/lesions/incisions/invasive device insertion sites (e.g., central lines). **Do not** collect specimens from closed wounds/ lesions/ incisions.

If wound is dry, moisten with sterile physiologic saline and collect the sample. Collect screening specimens before cleansing. Place swab in transport container.

For additional information on collecting wound samples, see [Diagnostic Services Manitoba Inc. - Clinical Microbiology Procedure Manual – Sample Collection](#).

- 9.6. Label the container with the site of sample collected and at least two unique patient identifiers.
- 9.7. Ensure the specimen is accompanied by the appropriate requisition that has been completed with all pertinent patient information.
 - Check the “other” box, indicate “testing for MDR *C. auris*” and rationale for the request on requisition
- 9.8. Keep specimens at room temperature and send to the lab as soon as possible according to facility procedure.

For additional information, see Guidelines for Specimen Collection ([Antibiotic Resistant Organisms Specific Disease Protocol Appendix B](#)).

10. Laboratory Identification

Current methods in frontline microbiology laboratories e.g., DSM, will detect *C. auris*. *C. auris* detection should raise suspicion for further investigation for guiding treatment and infection prevention and control response. ^[14.4]

11. Patient Transport

Transfer of patients within and between facilities should be restricted, and undertaken only if medically indicated and in consultation with site ICP/Infectious Disease.

Notify the transport service and receiving unit/clinic/site, in advance, of the patient status and necessary precautions.

11.1 Inter-Facility Patient Transport

Notify site ICP or on call ID physician before transport between facilities.

Precautions relevant to the Patient for Transfer

- Use a clean stretcher or wheelchair
- Cover all wounds
- Patient to perform hand hygiene on leaving room; staff to assist if necessary
- Patient to wear clean clothes, housecoat or cover gown
- Patient not to wear gloves or isolation gown

Precautions relevant to the Health Care Worker for Transfer

- Follow [Containment Precautions](#) to enter and exit the room
- Put on PPE before entering the room
- Remove PPE before leaving the room
- Perform hand hygiene before contact with the patient, before putting on and after taking off PPE and before leaving the room
- Apply clean gloves and gown outside the room to transport patient

Precautions relevant to the Transport Service

- Follow [Containment Precautions](#) inside the patient room
- Follow [Containment Precautions](#) at the receiving facility, to place patient in their room
- Consider wheelchair/stretcher used in the transport as contaminated. Clean and disinfect before removal from isolation space or use with another patient
- Disinfect vehicle surfaces and any equipment that was in contact with the patient with facility-approved disinfectant

Visitor Precautions for Transporting the Patient

- Perform hand hygiene before leaving the room
- Visitors wear gloves and gown inside the room
- Visitors are not required to wear gloves and gown outside the room

11.2 Intra facility transport

- Notify the transport service and receiving department, **in advance** of transport, regarding the need for Containment Precautions.
- During transport and out of room procedures, health care workers in contact with the patient must maintain [Containment Precautions](#). A dedicated clean person may be used to minimize environmental contamination.
- Before patient use, cover the clean transport chair/stretchers with a cover sheet, and place a clean cover sheet over the patient.
- If the patient's bed or personal wheelchair is used for transport, wipe the steering handles and side rails with disinfectant and allow required wet contact time before removing it from the room.
- After preparing the patient for transport, remove gown and gloves before exiting the room and perform hand hygiene.
- Apply clean PPE once out of the room or bed space, to transport patient.
- Take care not to contaminate the environment with soiled gloves during transport.
- Disinfected handles of the transport chair/stretchers or the patient bed are considered clean until gloves have direct contact with the patient or patient equipment.
- After use and while wearing PPE, clean and disinfect the transport chair/stretchers at the test/treatment destination if transport is complete, or upon return of the patient to the unit. Remove PPE after cleaning and disinfecting the transport chair/stretchers.

12. Environmental Cleaning

- 12.1 MDR *C. auris* can persist on healthcare environment surfaces and may spread between patients (unlike most other *Candida* species).
- 12.2 Clean the patient's room and equipment and with hospital-grade disinfectant effective against *Clostridium difficile* spores.^[14.7]
- 12.3 Follow manufacturer's recommended dilution and contact time instructions.
- 12.4 Clean and disinfect patient's rooms at least daily and when visibly soiled, including all horizontal surfaces and frequently touched surfaces in the patient's environment.^[14.7]
- 12.5 Terminally clean the patient environment and equipment^[14.4], including the removal and cleaning of the privacy curtains, upon discharge or discontinuation of Containment Precautions. Pay particular attention to the cleaning of multiple-use equipment.

13. Reporting

Report all confirmed cases to WRHA Infection Prevention and Control. Manitoba Health requires reporting to the Manitoba Health Public Health Surveillance Unit about unusual occurrences of emerging or non-reportable diseases. WRHA IP&C staff will complete the [Clinical Notification of Reportable Diseases and Conditions form](#) and alert Manitoba Health by telephone **if** notified about the case.

14. References

- 14.1. [Candida auris: A Drug-resistant Germ That Spreads in Healthcare Facilities Fact Sheet](#). (2017, July 14). Centers for Disease Control and Prevention (CDC). Accessed January 16, 2019.
- 14.2. [Candida auris, a globally emerging invasive, multidrug-resistant fungus – CCDR](#): Canada Communicable Disease Report Volume 42-12. (2016, December). Public Health Agency of Canada. Accessed January 16, 2019.
- 14.3. *Candida auris* contact screening. (2017, July 25). Dr. J. Embree and Dr. C. Turenne. Expert opinion email.
- 14.4. [Emerging multidrug-resistant Candida auris: information on infection control practices](#). (2016, July). Provincial Infection Control Network of BC (PICNet). Accessed January 16, 2019.
- 14.5. [Epidemiological Alert: Candida auris outbreaks in health care services](#). (2016, October 3). Pan American Health Organization (PAHO), World Health Organization (WHO). Accessed January 16, 2019.
- 14.6. [First hospital outbreak of the globally emerging Candida auris in a European hospital](#). (2016, September). Antimicrobial Resistance and Infection Control 2016 5:35. DOI: 10.1186/s13756-016-0132-5. Schelenz, Silke et al. Accessed January 16, 2019.
- 14.7. [First reported case of multidrug-resistant Candida auris in Canada](#). (2017, July 6). Dr. Schwartz, I.S. and Dr. Hammond, G.W. Accessed January 16, 2019.
- 14.8. [General Information about Candida auris](#). (2017, July 14). Centers for Disease Control and Prevention (CDC). Accessed January 16, 2019.
- 14.9. [Global Emergence of Invasive Infections Caused by the Multidrug-Resistant Yeast Candida auris](#) - Clinical Alert to U.S. Healthcare Facilities. (2016, June). Centers for Disease Control and Prevention (CDC). Accessed January 16, 2019.

- 14.10. [Investigation of the First Seven Reported Cases of *Candida auris*, a Globally Emerging Invasive, Multidrug-Resistant Fungus - United States, May 2013-August 2016](#). (2016, November). Centers for Disease Control and Prevention. Accessed January 16, 2019.
- 14.11. [Notes from the Field: Ongoing Transmission of *Candida auris* in Health Care Facilities — United States, June 2016–May 2017](#). Morbidity and Mortality Weekly Report/ 66(19); 514–515 (2017, May 19). Tsay, Sharon, MD et al. Accessed January 16, 2019.
- 14.12. [Recommendations for Identification of *Candida auris*](#). (2017, July 14). Centers for Disease Control and Prevention (CDC). Accessed January 16, 2019.
- 14.13. [Recommendations for Infection Control for *Candida auris*](#). (2017, July 28). Centers for Disease Control and Prevention (CDC). Accessed January 16, 2019.
- 14.14. [Routine Practices and Additional Precautions: Preventing the Transmission of Infection in Healthcare](#) (2012, April). Manitoba Health. Accessed January 16, 2019.

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