HEALTH HOLDING

HAFER ALBATIN HEALTH CLUSTER MATERNITY AND CHILDREN HOSPITAL

| | | | |
|---|---|---|---|
| **Department:** | Infection Prevention and Control Department | | |
| **Document:** | Multidisciplinary Policy and Procedure (MPP) | | |
| **Title:** | Multidrug Resistant Organisms (MDRO) and Clostridium Difficile Infection (CDI) Surveillance | | |
| **Applies To:** | Health Care Workers | | |
| **Preparation Date:** | February 09, 2025 | **Index No:** | IPC-MPP-034 |
| **Approval Date:** | February 27, 2025 | **Version :** | 4 |
| **Effective Date:** | March 27, 2025 | **Replacement No.:** | IPC-MPP-034(3) |
| **Review Date:** | March 27, 2028 | **No. of Pages:** | 12 |

## 1. PURPOSE:

1.1 To prevent the transmission of Multidrug Resistant Microorganisms (MDROs) within the hospital and control MDRO once discovered.

## 2. DEFINITONS:

2.1 Surveillance of MDROs is a critically important component of any MDRO control program, allowing detection of newly emerging pathogens, monitoring epidemiologic trends, and measuring the effectiveness of interventions.

2.2 MDROs are defined as microorganisms, predominantly bacteria, that are resistant to one or more classes of antimicrobial agents. Although the names of certain MDROs describe resistance to only one agent (e.g. MRSA, VRE), these pathogens are frequently resistant to most available antimicrobial agents.

2.3 Multiple drug resistant organisms (MDRO): Pathogens that develop resistance to one or more commonly used antibiotics

2.4 Types of MDROs :

2.4.1 Gram positive MDROs:

2.4.1.1 Methicillin-resistant Staphylococcus aureus (MRSA): Includes S. Aureus cultured from any specimen that tests oxacillin-resistant, cefoxitin-resistant, or methicillin-resistant by standard susceptibility testing methods

2.4.1.2 Vancomycin-resistant Enterococci (VRE): Enterococcus faecalis, Enterococcus faecium, or Enterococcus species unspecified that is resistant to vancomycin, by standard susceptibility testing methods

2.4.2 Gram negative MDROs:

2.4.2.1 Carbapenem-resistant Enterobacteriaceae (CRE):
Escherichia coli, Klebsiella oxytoca, Klebsiella pneumoniae, Klebsiella aerogenes or Enterobacter spp resistant to at least one carbapenem agent (imipenem, meropenem, doripenem, ertapenem, meropenem/vaborbactam, or imipenem/relebactam) OR by production of a carbapenemase (specifically, KPC,NDM, VIM, IMP, OXA-48) demonstrated using a recognized test (examples: polymerase chain reaction, metallo-β-lactamase test, modified-Hodge test, CarbaNP).

2.4.2.2 Cephalosporin-Resistant Klebsiella:
Klebsiella oxytoca or Klebsiella pneumoniae testing non susceptible (i.e., resistant or intermediate) to at least one cephalosporin agent (ceftazidime, cefotaxime, ceftriaxone, cefepime, ceftazidime/avibactam, or ceftolozane/tazobactam)

2.4.2.3 MDR Acinetobacter:
Any Acinetobacter spp. non-susceptible (resistant or intermediate) to at least one agent in 3 of following 6 antimicrobial classes: See appendices 7.1

2.4.2.4 MDR Klebsiella: Any Klebsiella spp. non-susceptible (resistant or intermediate) to at least one agent in 3 of following 5 antimicrobial classes. See appendices 7.2

2.4.2.5 Extended-spectrum beta-lactamases (ESBL):

2.4.2.5.1 ESBL are enzymes that confer resistance to most beta-lactam antibiotics, including penicillins, cephalosporins, and the monobactam aztreonam

2.4.2.5.2 They are present in Enterobacteriaceae (such as Escherichia coli and Klebsiella) and other gram negatives (such as Pseudomonas aeruginosa)

2.4.2.6 MDR Pseudomonas: Any Pseudomonas spp. non-susceptible (resistant or intermediate) to at least one agent in 3 of following 5 antimicrobial classes. See appendices 7.3

2.4.3 Clostridium difficile

2.4.3.1 A positive laboratory test result for C. Difficile toxin A and/or B, (includes molecular assays [PCR] and/or toxin assays) tested on an unformed stool specimen (must conform to the container) OR A toxin-producing C. Difficile organism detected by culture or other laboratory means performed on an unformed stool sample (must conform to the container).

2.4.3.2 Duplicate C. difficile:

2.4.3.2.1 Any C. difficile toxin-positive laboratory result from the same patient and location, following a previous C. difficile toxin-positive laboratory result within 14 days even across calendar months and readmissions to the same facility location.

2.4.3.2.2 There should be 14 days with no C. difficile toxin-positive laboratory result for the patient and specific location before another C. difficile LabID Event is entered into HESN plus for the patient and location.

2.4.3.2.3 The date of specimen collection of a previously submitted C. difficile LabID Event is considered Day 1.

2.4.3.3 Categorization of CDI by Occurrence:

2.4.3.3.1 Incident CDI Assay: Any positive test for CDI from a specimen obtained >8 weeks after the most recent positive test for CDI (or with no previous positive test for CDI documented) for that patient.

2.4.3.3.2 Recurrent CDI Assay: Any positive test for CDI from a specimen obtained >2 weeks and ≤8 weeks after the most recent positive test for CDI for that patient.

2.4.3.4 Categorizing of CDI by Presentation:

2.4.3.4.1 Community-Onset (CO): Any positive test for CDI collected in an outpatient location or an inpatient location ≤3 days after admission to the facility and the patient was not previously discharged from an inpatient location within the same facility within 4 weeks prior to current date of specimen collection.

2.4.3.4.2 Community-Onset Healthcare Facility-Associated (CO-HCFA): Any positive test for CDI collected from a patient who was discharged from the facility within 4 weeks prior to current date of stool specimen collection. The previous discharge must have been from an inpatient location within the same facility (in other words, an outpatient visit does not qualify for this definition).

2.4.3.4.3 Healthcare Facility-Onset (HO): Any positive test for CDI collected 4 days or more after admission to the facility.

2.5 Presentation by onset time

2.5.1 Community-Onset (CO): MDRO specimens collected in an outpatient location or an inpatient location ≤3 days after admission to the facility (i.e., days 1, 2, or 3 of admission).

2.5.2 Healthcare Facility-Onset (HO): MDRO specimens collected >3 days after admission to the facility (i.e., on or after day 4).

2.6 Presentation by symptoms

2.6.1 Colonization

2.6.1.1 The multiplication of a microorganism at a body site or sites without any overt clinical expression or detected immune reaction in the host at the time that the microorganism is isolated.

2.6.1.2 Colonization may or may not be a precursor of infection.

2.6.1.3 Colonization may be a form of carriage and is a potential source of transmission

2.6.1.4 Does not require treatment

2.6.2 Infection

2.6.2.1 The successful transmission of a microorganism to the host with subsequent multiplication, colonization, and invasion.

2.6.2.2 Infection may be clinical or subclinical and may not produce identifiable disease.

2.6.2.3 However, it is usually accompanied by measurable host immune response(s), such as specific antibodies or cell-mediated reactions

2.6.2.4 Requires treatment

2.7 Categorization of MDRO by Presentation:

2.7.1 Community-Onset (CO): Any specimen collected for clinical decision making tested positive from outpatient location or an inpatient location in the first 3 days of admission to the facility

2.7.2 Healthcare Facility-Onset (HO): Any specimen collected for clinical decision making tested positive from inpatient location 4 days or more after admission to the facility.

2.8 Inclusions and Exclusions of the specimens:

| Inclusion Criteria | Exclusion Criteria |
|---|---|
| Unique Blood Source:<br>• An MDRO isolated from blood in a patient with NO prior positive blood culture for the same MDRO in ≤2 weeks (14 days or less), even across calendar months and<br>different facility admissions<br>• An MDRO isolated from Non-blood Sample in a patient with NO prior positive blood culture for the same MDRO in ONE month (30 days or less), even across calendar months and different facility admissions | Duplicate MDRO Isolates:<br>• An MDRO isolated from blood in a patient with prior positive blood culture for the same MDRO in ≤2 weeks (14 days or less), even across calendar months and different facility admissions<br>• An MDRO isolated from Non-blood Sample in a patient with prior positive blood culture for the same MDRO in ONE month (30 days or<br>less), even across calendar months and different facility admissions |
| Clinical specimen:<br>• Any specimen, obtained for clinical decision making, testing positive for an MDRO | Surveillance (screening) specimen:<br>• Any sample collected as a part of active surveillance culture/testing (ASC/AST), i.e. screening or nonclinical decision |

## 3. POLICY:

3.1 Screen all patients who are:

3.1.1 Admitted to the intensive care units (ICU).

3.1.2 Transferred from other hospitals or have been treated in another hospital / clinic within the past six months.

3.13 Known to be previously MDROs positive.

3.1.4 Roommates of positive patients not on isolation precautions.

3.2 MDRO is not necessarily HAI; it could be infection or colonization

3.3 **Standard precautions** must be observed for all patient care

3.4 Healthcare facility-onset MDRO means that clinical specimens collected after 3 days from admission (admission is considered day 1) are positive.

3.5 HAI means the definition of infection is met for the first time after 2 days from admission (admission is considered day 1).

3.6 Analysis of MDRO

| Measure | Calculation | Application |
|---|---|---|
| MDRO infection incidence rate | Number of infections of certain MDRO type x 1000 / Number of patient days | Location-specific measure |
| MDRO- LabID Event | Laboratory-identified MDRO Events x 1000 / The number of patient days, admissions, or encounters | Location-specific measure |

3.7 MDRO-Infection Surveillance:

3.7.1 Rate is then stratified by time (e.g., month, quarter, etc.) and patient care location.

3.8 MDRO-Laboratory-Identified (LabID) Event:

3.8.1 These data are used to calculate four distinct proxy measures including:

3.8.1.1 Admission prevalence rate and

3.8.1.2 Overall prevalence rate based on clinical testing (measures of exposure burden),

3.8.1.3 MDRO bloodstream infection incidence rate (a measure of infection burden) and

3.8.1.4 Overall MDRO infection/colonization incidence rate (a measure of healthcare acquisition).

3.8.2 Overall MDRO infection/colonization incidence rate (a measure of healthcare acquisition).

3.9 IPC department provides compliance audit feedback to HCWs regarding their performance in implementation of MDRO bundle on regular basis and corrective actions are applied accordingly.

3.10 Applies bundle of care for MDROs including judicious use of antimicrobial agents, patient placement, standard infection control precautions to prevent transmission of MDROs, environmental measures etc.

3.11 Difference in timing of HAI and MDRO surveillance

| Admission days | HAI | Present on admission | MDRO Community-onset | MDROHealthcare-onset |
|---|---|---|---|---|
| 1<br>2 | Free during the first 2 days | Signs of infection in the first 2 days | Clinical specimen collected in the first 3 days is positive | Clinical specimen collected in the first 3 days is negative |
| 3<br>4<br>5 | Signs of infection on or after 3rd day | Signs of infection may or may not continue on or after 3rd day | Clinical specimen collected after 3rd day is positive or negative | Clinical specimen collected after 3rd 5 day is positive |

## 4. PROCEDURE:

4.1 Factors contributing to MDRO in healthcare setting

4.1.1 Selective pressure exerted by exposure to antimicrobial in the community
Inappropriate and uncontrolled use of antimicrobial agents in healthcare setting

4.1.1.1 Increased use of antimicrobial prophylaxis

4.1.1.2 Increased use of poly microbial antimicrobial therapy

4.1.1.3 Administration of suboptimal doses and/or for insufficient duration

4.1.1.4 Inappropriate choice of drug due to misdiagnosis, lack of microbiologic lab, and empirical treatment

4.1.1.5 Poor patient compliance

4.1.1.6 Lack of alternative appropriate antimicrobials

4.1.2 Inadequate adherence to infection control measures

4.1.3 Contact with colonized or infected patients (lack of isolation)
Availability of vulnerable host

4.1.3.1 Severe underlying disease

4.1.3.2 Compromised host defenses such as dialysis, transplant, and oncology patients

4.1.3.3 Recent surgery

4.1.3.4 Indwelling medical devices

4.1.3.5 Transfer of the patient between institutions, specially suspected ones  Prolonged hospital stay

4.2 Prevention of MDROs arranged according to CDC Guideline

4.2.1 **Structures and system administrative support**

4.2.1.1 Make MDRO prevention and control an organizational patient safety priority.

4.2.1.2 Provide administrative support, and both fiscal and human resources, to prevent and control MDRO transmission within the healthcare organization.

4.2.1.3 Keep good communication and feedback to update on the progress and effectiveness of interventions

4.2.1.4 Implement systems to communicate information about reportable MDROs

4.2.1.5 Make MDRO prevention and control an organizational patient safety priority.

4.2.1.6 Implement multidisciplinary measures to monitor and promote healthcare staff compliance

4.2.1.7 Implement systems to designate and communicate information about patients known to be colonized or infected with a targeted MDRO

4.2.1.8 Support participation of the facility or healthcare system in local, regional, and national coalitions to combat emerging or growing MDRO problems.

4.2.1.9 Human resources: trained infection control practitioners and adequate staffing level

4.2.1.10 IT measures to automate antimicrobial requests and control restriction

4.2.1.11 Provide hand hygiene and environmental cleaning products

4.2.1.12 Provide clinicians with antimicrobial susceptibility reports and analysis of current trends, updated at least annually, to guide antimicrobial prescribing practices.

4.2.1.13 Written plan for implementation

4.2.2 **Education and training of healthcare workers**

4.2.2.1 Provide training and education on risks and prevention of MDRO spreading during orientation and periodic educational updates for healthcare personnel.

4.2.2.2 Do the assessment and evaluation of the staff's knowledge and skills by field observation and the online Infection Control module when available

4.2.2.3 Provide clinicians with updated antimicrobial susceptibility reports and analysis of current trends, to guide antimicrobial prescription practices

4.2.2.4 Increase the frequency of MDRO educational programs for those who work in areas with high MDRO rates.

4.2.2.5 Additional review of wise utilization of antimicrobial agents

4.2.3 **Judicious use of antimicrobials**

4.2.3.1 Appropriate use of antimicrobials

4.2.3.1.1 Limit antimicrobial prescription

4.2.3.1.2 Use local antibiogram to effectively treat infections

4.2.3.1.3 Treat infection, not contamination

4.2.3.1.4 Treat infection, not colonization

4.2.3.1.5 Stop treatment when infection is cured or unlikely

4.2.3.1.6 Avoid excessive duration of treatment

4.2.3.1.7 Use narrow spectrum agents and restrict broad spectrum and potent antibiotics

4.2.3.2 Implement systems (e.g., computerized physician order entry, comment in microbiology susceptibility report, notification from a clinical pharmacist or unit director) to prompt clinicians to use the appropriate antimicrobial agent and regimen for the given clinical situation.

4.2.3.3 Provide clinicians with antimicrobial susceptibility reports and analysis of current trends, updated at least annually, to guide antimicrobial prescribing practices.

4.2.3.4 Monitor trends in the incidence of target MDROs in the facility over time using appropriate statistical methods to determine whether MDRO rates are decreasing and whether additional interventions are needed

4.2.3.5 Establish a baseline (e.g., incidence) for targeted MDRO isolates by reviewing results of clinical cultures

4.2.4 MDRO Surveillance

4.2.4.1 A critical component of any MDRO control program

4.2.4.1.1 Important patient safety component
4.2.4.1.2 Allows detection of newly emerging resistance pattern
4.2.4.1.3 Monitors epidemiologic trends in incidence of MDROs over time
4.2.4.1.4 Measures the effectiveness of interventions

4.2.4.2 Establish systems to ensure that clinical microbiology laboratories (in-house and outsourced) promptly notify infection control staff or a medical director/ designee when a novel resistance pattern for that facility is detected

4.2.4.3 Use standardized laboratory methods and follow published guidance for determining antimicrobial susceptibility of targeted (e.g., MRSA, VRE, MDR-ESBL) and emerging (e.g., VRSA, MDR-Acinetobacter baumannii) MDROs

4.3 Healthcare pathogen screening. See appendices 7.4

4.3.1 Screening is the collection of specimens from specific body sites known to be associated with colonization by a specific microorganism.

4.4 Indication of screening:

4.4.1 In the following conditions:

4.4.1.1 During an outbreak as a part of outbreak investigation and case finding
4.4.1.2 As part of infection control measures to manage the outbreak
4.4.1.3 As part of routine infection control measures, to find new cases before admission to critical care units and special papulation

4.4.2 Screening specimens should be taken once the antibiotic has been discontinued for at least 48 hours to avoid false negative results

4.4.3 Screening may not be appropriate in the following conditions:

4.4.3.1 Routine screening of well people admitted from the community is not recommended
4.4.3.2 Routine screening of staff is not recommended. If staff are epidemiologically linked to the transmission of a MDRO, review infection control practices and predisposing factors
4.4.3.3 If it is found incidentally that staff are colonized with MDROs, no work restrictions for these staff are required. Instead, staff should receive education on standard precautions, particularly hand hygiene

4.5 Targeted patients for screening: See appendices 7.5

4.6 Infection control measures

4.6.1 Prevent healthcare associated infection

4.6.1.1 Implementing standard precautions, particularly hand hygiene
4.6.1.2 Implement contact precautions routinely for all patients infected with target MDROs and for patients that have been previously identified as being colonized with target MDROs (e.g., patients transferred from other units or facilities who are known to be colonized).
4.6.1.3 Use masks according to Standard Precautions when performing splash-generating procedures (e.g., wound irrigation, oral suctioning, intubation)
4.6.1.4 Implementing evidence-based best practices to prevent device-associated and procedure associated HAIs
4.6.1.5 Accurate and rapid diagnosis of infections and treatment of infectious etiology
4.6.1.6 Reduce device utilization and improve insertion and post insertion care

4.6.2 Prevention of MDRO transmission

4.6.2.1 Strict hand hygiene and monitor HCWs compliance rate
4.6.2.2 PPE: Wear gloves and gown when entering the room, removing before exiting
4.6.2.3. Active surveillance cultures: to detect asymptomatic patients
4.6.24 Use of isolation precautions: standard & contact for patients colonized or infected with

4.6.3 Patient placement in hospital :

4.6.3.1 All Patients with MDROs should be placed in a single room.
4.6.3.2 When single patient rooms are not available, cohort patients with the same MDRO in the same room.

4.6.3.3 When cohort cases with the same MDRO are not possible, place MDRO patients in rooms with patients who are at low risk for acquiring an MDRO and who are likely to have shorts length of stay after discussion with ICP.

4.6.4 Assign dedicated nurses and ancillary service staff to the care of MDRO patients only. Stop new admissions to the unit if transmission continues despite the implementation of the increased control measures.

4.6.5 Enhanced environmental measures:

4.6.5.1 Clean and disinfect surfaces and equipment that may be contaminated with pathogens, including those that are in proximity to the case and frequently touched surfaces in the patient care setting on an extra frequent schedule compared to that for minimal touch surfaces.

4.6.5.2 Dedicate noncritical items to use on individual patients known to be infected or colonized with MDRO.

4.6.5.3 Designate cleaning equipment for contact isolation rooms.

4.6.5.4 Focus on cleaning and disinfection of frequently touched surfaces and equipment in the immediate vicinity of the patient.

4.6.5.5 Disinfect reusable medical equipment between patients

4.7 Precautions during the transportation of patients. See Policy Isolation Precautions.

4.8 Prevention of MDROs arranged according to CDC Guideline

4.8.1 Structures and system administrative support

4.8.2 Education and training of healthcare workers

4.8.3 Judicious use of antimicrobials

4.9 MDRO Surveillance

4.9.1 A critical component of any MDRO control program

4.9.1.1 Important patient safety component

4.9.1.2 Allows detection of newly emerging resistance pattern

4.9.1.3 Monitors epidemiologic trends in incidence of MDROs over time

4.9.1.4 Measures the effectiveness of interventions

4.9.2 Establish systems to ensure that clinical microbiology laboratories (in-house and outsourced) promptly notify infection control staff or a medical director/ designee when a novel resistance pattern for that facility is detected

4.9.3 Use standardized laboratory methods and follow published guidance for determining antimicrobial susceptibility of targeted (e.g., MRSA, VRE, MDR-ESBL) and emerging (e.g., VRSA, MDR-Acinetobacter baumannii) MDROs

4.9.4 Infection control measures

4.9.5 Prevent healthcare associated infection

4.9.6 Prevention of MDRO transmission

4.9.6.1 Patient placement in hospital :

4.9.6.2 Enhanced environmental measures:

4.10 Epidemiology of specific MDRO outbreaks in hospitals. See IPC Policy No. 55 Management of outbreak.

4.10.1 MRSA

4.10.2 VRE

4.10.3 CRE

4.10.4 ESBL

4.10.5 MDR Pseudomonas aeruginosa

4.10.6 MDR Acinetobacter

4.10.7 Clostridium difficile

4.11 Management of MDRO-Positive Patients

4.11.1 Initiate contact precautions in addition to standard precautions.

4.11.2 Patient must be in a single room or can be cohorted with another patient with the same organism.

4.11.3 MDRO-positive patients who are in multi-bed rooms can be managed temporarily while waiting to be transferred to a single room or an appropriate cohort.

4.11.3.1 Place a sign on the cubicle or curtain of the patient's bed.

4.11.3.2 Ensure easy access to PPE and alcohol-based hand rub.
4.11.3.3 Practice strict standard precautions between interactions with patients in the room.
4.11.3.4 Transfer to a single room or cohort with another patient with the same organism as soon as possible.

4.11.4 Place a contact isolation sign on the outside of the isolation room door.
4.11.5 Practice strict hand hygiene.
4.11.6 Cohort non-critical items such as stethoscopes and pressure cuffs with the patient.
4.11.7 Store the minimum amount of supplies in the patient's room
4.11.8 Use an isolation cart for extra supplies (kept outside the room).
4.11.9 Ensure that all staff understand and comply with the isolation precautions and hand hygiene protocol.
4.11.10 Limit the patient's activity outside the room to treatments or tests
4.11.11 Notify receiving departments/wards (e.g., Radiology, Endoscopy, Clinics, OR) of the patient's isolation status when the patient must be transported for treatment/tests.
4.11.12 Ensure concurrent and terminal cleaning of the isolation room and equipment as per house keeping procedure.
4.11.13 Handle/discard contaminated items as per Standard Precautions.

4.12 MDRO/CDI Reporting Methods:

4.12.1 Facility-wide by location:
4.12.1.1 Report MDRO LabID event and denominator for each location separately and cover all locations in a facility.
4.12.1.2 Must monitor All specimen sources.
4.12.1.3 This reporting method requires the most effort but provides the most detail for local and national statistical data.

4.12.2 Selected locations:
4.12.2.1 Report MDRO LabID event and denominator from one or more specific locations within a facility.
4.12.2.2 Exception: inpatient rehabilitation units, 24-hour observation, and emergency department
4.12.2.3 Must monitor All specimen sources.
4.12.2.4 This reporting method is ideal for use during targeted prevention programs.

4.12.3 Overall facility-wide:
4.12.3.1 Report MDRO LabID event and denominator from all inpatient locations AND separately for outpatient locations (emergency department, and 24-hour observation locations)
4.12.3.2 Must monitor All specimen sources.
4.12.3.3 Exception: rehabilitation facility and inpatient psychiatric.

4.12.4 Overall facility-wide: Blood Specimens Only
4.12.4.1 Report MDRO LabID event and denominator from all inpatient locations AND separately for outpatient locations (emergency department, and 24-hour observation locations)
4.12.4.2 Blood Specimens Only.
4.12.4.3 Exception: rehabilitation facility and inpatient psychiatric

4.12.5 Laboratory-Identified (LabID) Event:
4.12.5.1 Include all non-duplicate MDRO isolates from any specimen source and unique blood source MDRO isolates
4.12.5.2 Allows laboratory testing data to be used without clinical evaluation of the patient
4.12.5.3 Provides proxy infection measures of MDRO and/or C. difficile exposure burden, infection burden, and healthcare acquisition
4.12.5.4 ONLY for positive laboratory results (e.g., cultures) that are collected for "clinical" purposes (i.e., for diagnosis and treatment).

4.12.6 Infection Surveillance Reporting:
4.12.6.1 Enables users to utilize HAI definitions for identifying and reporting infections associated with MDROs and/or C. difficile.

4.12.6.2 Surveillance must occur from at least one patient care area and requires active, patient-based, prospective surveillance of the chosen MDRO(s) and/or C. difficile infections (CDIs) by a trained Infection Preventionists (IP).

4.12.6.3 Infection Surveillance can occur in any inpatient location where such infections may be identified and where denominator data can be collected,

4.12.6.4 Surveillance for all types of HAIs with MDRO selected for monitoring in at least one location in the healthcare facility

4.12.6.5 No active surveillance culture/testing (ASC/AST) results are to be included in this reporting of individual results.

4.12.7

| | LabID MDRO | LabID CDI | Infection |
|---|---|---|---|
| 1. Facility-wide by location | YES | YES | |
| 2. Selected locations | YES | YES | YES |
| 3. Overall facility-wide | YES | YES | |
| 4. Overall facility-wide: Blood Specimens Only | YES | | |

4.13 Active surveillance culture/testing (ASC/AST)

4.13.1 It is a testing that is intended to identify the presence/carriage of microorganisms for the purpose of instituting or discontinuing isolation precautions.

4.13.2 Can be done in inpatient locations, especially ICUs

4.13.3 Can target one or more organisms, with the most common being MRSA and/or VRE

4.13.4 Patient eligibility for ASC/AST

4.13.4.1 All patients in the chosen unit irrespective of the organism history or

4.13.4.2 All patients in the chosen unit who have NO documented positive infection or colonization of the target organism (such as MRSA or VRE) during the previous 12 months.

4.13.5 Timing of ASC/AST

4.13.5.1 At admission: Specimens for AST are obtained within 3 days from admission

4.13.5.2 At both admission and discharge: Specimens for AST are obtained within 3 days from admission and at the time of discharge/transfer in patients who stay of more than 3 days. Discharge/transfer AST should include all discharges (including discharges from the facility or to other wards or deaths) and can include the most recent weekly AST if performed more than 3 days after admission to the patient care location. Discharge/transfer AST should not be performed on patients who tested positive on AST admission.

| Admission specimens | Discharge/transfer specimens | Need for isolation at admission | Organism acquisition during stay |
|---|---|---|---|
| Negative | Not done | No | Cannot be assessed |
| Negative | Negative | No | No |
| Negative | Positive | No | Yes |
| Positive | Should not be done | Yes | Not applicable |

## 5. MATERIALS AND EQUIPMENT:

5.1 **Forms and Records:**

5.1.1 Multi Drug Resistant Organism (MDRO) form.

5.2 **Materials and Equipment**

5.2.1 N/A

## 6. RESPONSIBILITIES:

6.1 The microbiology lab will notify the ward and Infection Prevention and Control (IP&C) Department of the MDROs.

6.2 Patients previously discharged MDRO positive are flagged and documented by IPs.

## Appendix 7.1 MDR Acinetobacter:

| | | |
|---|---|---|
| Aminoglycosides: ✓ Amikacin ✓ Gentamicin ✓ Tobramycin | Cephalosporins: ✓ Cefepime ✓ Ceftazidime ✓ Cefotaxime ✓ Ceftriaxone | β-lactam/ β-lactamase inhibitor combination: ✓ Piperacillin/tazobactam |
| Carbapenems: ✓ Imipenem ✓ Meropenem ✓ Doripenem | Fluoroquinolones: ✓ Ciprofloxacin ✓ Levofloxacin | Sulbactam: ✓ Ampicillin/sulbactam |

## Appendix 7.2 MDR Klebsiella

| | | |
|---|---|---|
| Aminoglycosides: ✓ Amikacin ✓ Gentamicin ✓ Tobramycin | Cephalosporins: ✓ Cefepime ✓ Ceftazidime ✓ Cefotaxime ✓ Ceftriaxone | β-lactam/ β-lactamase inhibitor combination: ✓ Piperacillin/tazobactam |
| Carbapenems: ✓ Imipenem ✓ Meropenem ✓ Doripenem | Fluoroquinolones: ✓ Ciprofloxacin ✓ Levofloxacin | |

## Appendix 7.3 MDR Pseudomonas

| | | |
|---|---|---|
| Aminoglycosides: ✓ Amikacin ✓ Gentamicin ✓ Tobramycin | Cephalosporins: ✓ Cefepime ✓ Ceftazidime ✓ Cefotaxime ✓ Ceftriaxone | β-lactam/ β-lactamase inhibitor combination: ✓ Piperacillin/tazobactam |
| Carbapenems: ✓ Imipenem ✓ Meropenem ✓ Doripenem | Fluoroquinolones: ✓ Ciprofloxacin ✓ Levofloxacin | |

## Appendix 7.4 Healthcare pathogen screening.

| Microorganism | Required specimens for screening |
|---|---|
| MRSA | o Nares, axilla, and groins |
| VRE | o Rectal swab or Perianal swab , wounds and catheter exit sites. |
| CRE | ○ Stool sample or o Rectal swab AND, if indicated<br>○ Urine (in the presence of a urinary catheter) o Stoma swab (patient with colostomy or ileostomy) o Wounds Catheter exit sites |
| ESBL | Stool sample or o Rectal swab AND, if indicated Urine (in the presence of a urinary catheter) |
| Acinetobacter | o Nostrils, pharynx, and skin surface |
| Candida Auris | Screen for C. auris colonization using a composite swab of the patient's bilateral axilla and groin. Available data suggest that these sites are the most common and consistent sites of colonization. Although patients have been colonized with C. auris in the nose, mouth, external ear canals, urine, wounds, and rectum, these sites are usually less sensitive for colonization screening. |

## Appendix 7.5 Targeted patients for screening

| Microorganism | Targeted patients for screening |
|---|---|
| MRSA | Screen all patients who are:<br>○ Transferred from another hospital<br>○ Have a history of hospitalization one month before admission<br>○ Previously infected or colonized with MRSA o Admitted to ICU and oncology unit<br>○ Scheduled for Cardiac Surgery, Orthopedic surgery, Neurosurgery and surgery with an implant.<br>○ Continuous ambulatory peritoneal dialysis<br>○ Roommates of positive patients not on precautions for more than 72 hours |
| VRE | ○ Patients who were previously VRE positive within the past 6-12 months.<br>○ Roommates exposed to VRE-positive patients. |
| CRE | ○ Roommates exposed to CRE-positive patients<br>○ Active surveillance culture before admission in specific units |
| ESBL | ○ Roommates exposed to ESBL-positive patients<br>○ Active surveillance culture for specific at-risk units such as intensive care, burn, oncology-hematology, hemodialysis and organ transplant units |
| Acinetobacter | o Active surveillance culture before admission in specific units |

| | |
|---|---|
| Candida Auris | Screen all patients who are:<br>○ Admitted to the critical care units and with specific risk factors to rule out Candida auris colonization.<br>○ Patients with an indwelling medical device, such as a central venous catheter, breathing aid tubes, urinary catheter, biliary catheter, or wound drain. o Any patient transferred from another healthcare facility OR longterm facility. o Roommates were exposed to C. auris-positive patients for more than 48 hours.<br>○ Individuals with current multidrug-resistant gram-negative bacteria who received healthcare outside of the Kingdom of Saudi Arabia (KSA) within the last 12 months.<br>○ Patients transferred from a unit with current transmission within the |
| | healthcare facility of C. auris or recent transmission within the last 30 days.<br>○ Carbapenem-Resistant entero bacterales (CRE) positive patient (infected & colonized).<br>○ Immunocompromised patient.<br>Others:<br>○ Screening is recommended in departments that are experiencing outbreaks or having an increase in the number of ongoing cases and/or colonization.<br>NB: In all cases, in the four weeks prior to diagnosis in the index patient, the healthcare facility should look back to see if there has been an increase in detection of Candida in the same intensive care setting or ward as this may represent unrecognized transmission. |

**Attachment** : Forms and Records Attachment: Multi Drug Resistant Organism (MDRO) form

| COMPONENTS | DD/MM | DD/MM | DD/MM | DD/MM | DD/MM | DD/MM | DD/MM | DD/MM | DD/MM | DD/MM |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Strict Hand Hygiene practices | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A |
| 1. Strict Hand Hygiene practices | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A |
| 3. Daily disinfection of patient care equipments | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A |
| 4. Appropriate use of antibiotics | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A |
| 5.Daily review of the antibiotic necessity | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A |
| 6.Prompt discontinuation of unnecessary Antimicrobial agent | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A |
| 7. Adherence to decolonization practices (E.g. If MRSA positive ) | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A |
| 8. Follow strict contact precautions if patient is transferred from other hospitals | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A | ☐ Yes ☐ No ☐ N/D ☐ N/A |

6.3 Only IPs can deflag / remove MDRO alerts.

## 7. APPENDICES:

7.1 MDR Acinetobacter.
7.2 MDR Klebsiella.
7.3 MDR Pseudomonas.
7.4 Healthcare pathogen screening.
7.5 Targeted patients for screening.

## 8. REFERENCES:


8.1 Healthcare-Associated Outbreak Management Manual. September 2023 V. 7.1
8.2 GDIPC website (https://gdipc.sa/)
8.3 Ministry of Health of Saudi Arabia (https://www.moh.gov.sa/)
8.4 Healthcare Asociated Infections (HAIs) Surveillance Manual . Second edition.MOH Surveillance Manual. Last updated: November 2023


## 9. APPROVALS:

| | Name | Title | Signature | Date |
|---|---|---|---|---|
| **Prepared by:** | Ms. Marilou C. Magallano | IPC Practitioner | | February 09, 2025 |
| **Prepared by:** | Ms. Wadha Mohd Al Shammari | IPC Coordinator | | February 09, 2025 |
| **Reviewed by:** | Ms. Awatif Hamoud Al Harbi | IPC Director | | February 12, 2025 |
| **Reviewed by:** | Mr. Sabah Turayhib Al Harbi | Nursing Director | | February 16, 2025 |
| **Reviewed by:** | Mr. Abdulellah Ayed Al Mutairi | QM & PS Director | | February 19, 2025 |
| **Reviewed by:** | Dr. Thamer Naguib | Medical Director | | February 23, 2025 |
| **Approved by:** | Mr. Fahad Hazam Al Shammari | Hospital Director & IPC Committee Chairman | | February 27, 2025 |