



Guidelines for Infection Prevention and Control of Multidrug Resistant Organisms (MDRO)

AMRH/IC/GUD/001/Vers.02
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Approval Process					
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Acronyms

AMRH	Al Masarra Hospital
GCC	Gulf Cooperation Council
HCAI	Healthcare Associated Infection
HCW	Health Care Worker
IP&C	Infection Prevention and Control
MDRO	Multiple Drug Resistant Organism
MRSA	Methicillin-Resistant Staphylococcus aureus
PPE	Personal Protective Equipment
VRE	Vancomycin resistant



Guidelines for Infection Prevention and Control of Multidrug Resistant Organisms (MDRO)

1. Introduction

Multidrug Resistant Organisms are bacteria that are resistant to many or all antibiotics (GCC, 2018). The MDRO can lead to infections in the bloodstream, respiratory system, urinary tract, wounds, and surgical sites and in the skin. MDRO can be more difficult to treat, because they are resistant to certain antibiotics and the examples of MDRO include: *Enterococcus* species, (Vancomycin resistant-VRE), *Staphylococcus aureus* (Methicillin resistant – MRSA), *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *Pseudomonas aeruginosa* and *Enterobacter* Species.

The antibiotic resistance often happens due to frequent use of antibiotics.

2. Scope

This document is applicable to all healthcare workers of Al Masarra Hospital (AMRH).

3. Purpose

- 3.1 To guide staff in steps needed to prevent the transmission of multidrug-resistant microorganisms (MDROs) within the hospital.
- 3.2 To reduce effectively and comprehensively the Healthcare-Associated infection (HCAI) caused by (MDROs).

4. Definitions

- 4.1 **Multidrug Resistant Organisms (MDROs):** are bacteria that are resistant to many or all antibiotics.
- 4.2 **Cohort:** Keeping a group of people who have same illness with same symptoms in the same time.
- 4.3 **Decolonization:** Removing the MRSA bacteria from the skin by a series of actions done continuously for seven (7) days.



- 4.4 **Terminal cleaning:** is the thorough, extensive cleaning and disinfection of the environmental surfaces and it is indicated after a patient is discharged or after using a clinical area occupied by a highly infectious patient.
- 4.5 **Healthcare-Associated infection (HCAI):** infections that occur while receiving health care, developed in a hospital or other health care facility that first appear 48 hours or more after hospital admission, or within 30 days after having received health care.
- 4.6 **Personal Protective Equipment (PPE):** is specialized equipment or clothing used to protect healthcare workers (HCW) and patients from germs. It creates a barrier between the virus, bacteria or fungi and HCW. It includes gloves, gowns, goggles, masks and face shields.

5. Guidelines

5.1 Management of Multidrug-resistant Microorganisms (MDROs)

- 5.1.1 Notification of MDRO
- 5.1.1.1 The microbiology lab will notify the ward and Infection Control Practitioner (IPC) of the positive case of MDROs.
- 5.1.2 Initiate contact precautions in addition to standard precautions. (*See Appendix 2. Isolation Flowchart*)
- 5.1.3 Patient must be in a single room or can be cohorted with another patient with the same organism. (It considered a priority to use single room as isolation for any case with MDRO).
- 5.1.4 Place a contact isolation sign on the outside of the isolation room door.
- 5.1.5 Practice strict hand hygiene.
- 5.1.6 Dedicate non-critical items such as stethoscopes and pressure cuffs with the patients.
- 5.1.7 Store the minimum amount of PPE supplies in the isolation room.



- 5.1.8 Ensure that all staff understand and comply with the isolation precautions and hand hygiene protocol.
- 5.1.9 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.
- 5.1.9.1 Place a sign on the cubicle or curtain of the patient's bed (example in the A&E) and practice contact precautions whenever in contact with patient or his/her surroundings.
- 5.1.9.2 Ensure easy access to PPE and alcohol-based hand rubs.
- 5.1.9.3 Practice strict standard precautions between interactions with patients in the room.
- 5.1.9.4 Transfer to a single room or cohort with another patient with the same organisms soon as possible.
- 5.1.10 Limit the patient's activity outside the room to treatments or tests.
- 5.1.11 Notify receiving departments/wards (e.g. Radiology and Clinics) of the patient's isolation status when the patient must be transported for treatment/tests.
- 5.1.12 If the patient determined to be MRSA positive, start decolonization procedure after coordination with infection control practitioner. (*See Appendix 1. MRSA Decolonization Procedure*)
- 5.1.13 Ensure terminal cleaning of the isolation room and equipment as per housekeeping procedure. (*See Appendix 4. Terminal cleaning of Isolation Room*)
- 5.2 Discontinuing Contact Isolation**
- 5.2.1 Discontinue isolation precautions in consultation with the Infection Prevention and Control (IPC) department.
- 5.3 Screening of Contact Isolation (Site)**
- 5.3.1 Site to screen includes:



5.3.1.1 Anterior nares

5.3.1.2 Non intact skin areas (e.g. tracheotomy, pressure sores or surgical wounds)

5.3.1.3 Groin and axilla

5.4 Indication for screening of MDRO

5.4.1 Screening of HCWs or environment is not indicated.

5.4.2 For patient screening (*Refer to P&P of Surveillance of Healthcare Associated Infection - AMRH/IC/P&P/016/Vers.02*).

6. Responsibilities

6.1 Microbiology Laboratory Shall:

6.1.1 Notify the ward about the positive cases of MDROs.

6.1.2 Notify the infection control practitioner (IPC) of all new positive cases of MDROs.

6.2 Treating Doctors Shall:

6.2.1 Request Infection Disease consultation as needed.

6.2.2 Sign the single room request form to initiate isolation. (*See Appendix 5. Single Room Request Form*)

6.2.3 Restrict antibiotic use, especially broad-spectrum antibiotics.

6.2.4 Discharge the patient from the hospital once his/her medical condition allows.

6.3 Infection Control Practitioner Shall:

6.3.1 Initiate contact precautions in addition to standard precautions.

6.3.2 Ensure that all staff understand and comply with isolation precautions and hand hygiene policy. (*Refer to P&P of Hand Hygiene - AMRH/IC/P&P/006/Vers.02*)

6.3.3 Consult on starting date for the MRSA decolonization procedure and inform the assigned staff nurse.



6.3.4 Update the policy according to the date requested.

6.4 Staff Nurses Shall:

- 6.4.1 Initiate contact isolation precaution with standard precaution. (*See Appendix 2. Isolation Flowchart*)
- 6.4.2 Place a contact isolation sign on the outside of the isolation room door.
- 6.4.3 Practice strict hand hygiene procedure.
- 6.4.4 Cohort non-critical items such as stethoscopes and pressure cuffs with the patient.
- 6.4.5 Maintain the minimum number of PPEs (medical) supplies inside patient's room.
- 6.4.6 Limit the patient's activity outside the room to treatments or tests.
- 6.4.7 Notify receiving departments/wards (e.g. radiology, endoscopy, and clinics) of the patient's isolation status when the patient must be transported for treatment/tests.
- 6.4.8 Start MRSA decolonization after consultation of IP&C Practitioner. (*See Appendix 3. Management of Patient with MRSA or Colonization*)
- 6.4.9 Handle/discard contaminated items as per standard precautions.
- 6.4.10 Observe the cleaner for terminal cleaning. (*See Appendix 4. Terminal cleaning of Isolation Room*)



7. Document History and Version Control Table

Document History and Version Control			
Version	Description of Amendment	Author	Review Date
1	Initial Release	Wafa Al Balushi	September 2022
2	Reviewed and Updated	Wafa Al Balushi	April 2025
Written by	Reviewed by	Approved by	
Wafa Al Balushi	Noora Al Zadjali	Dr. Bader Al Habsi	
	Dr. Nada Al Tamtami		

8. Related Documents

- 8.1 P&P of Surveillance of Healthcare Associated Infection - AMRH/IC/P&P/016/Vers.01
- 8.2 Policy and Procedure of Hand Hygiene - AMRH/IC/P&P/006/Vers.02
- 8.3 Appendix 1. MRSA Decolonization Procedure
- 8.4 Appendix 2. Isolation Flowchart
- 8.5 Appendix 3. Management of Patient with MRSA or Colonization
- 8.6 Appendix 4. Terminal Cleaning of Isolation Room
- 8.7 Appendix 5. Single Room Request Form
- 8.8 Appendix 6. Audit Tool.



9. References

Title of book/Journal/articles/Website	Author	Year of publication	Page
GCC Infection Control Manual	GCC centre for infection Control	2018	86-87 & 366-369
https://www.cdc.gov/nhsn/pdfs/pscmanual/pscmanual_current.pdf	CDC.gov	2019	-



Appendices

Appendix 1. MRSA Decolonization Procedure

MRSA DECOLONIZATION PROCEDURE

Assessment for decolonization will be performed by the Infection Control Practitioner (ICP) in consultation with the attending physician and an Infectious Disease Consultant.

Maintain Contact Isolation during decolonization treatment.

SUPPLIES: Chlorhexidine 4%
Mupirocin/Bactroban, per treating doctor's order
Clean linens for the bed and patient
Personal protective equipment (PPE)

1. Spread full-strength Chlorhexidine 4% solution from neck to toes, ensuring coverage of underarms, groin, and between fingers and toes.
 - 1.1 Cover the patient with a sheet and wait for 10 minutes.
 - 1.2 Rinse with warm water.
 - 1.3 Change the bed linens and the patient's clothing completely after each bath/shower.
 - 1.4 Repeat this process twice a day.
 - 1.5 Shampoo hair with the Chlorhexidine solution for 3 days.
2. Apply Mupirocin/Bactroban ointment to anterior nares (inside nose) after Chlorhexidine treatment, when the patient is dry and dressed as ordered by the MD.

NB: Mupirocin should not be applied to open wounds.
3. These treatments must be given for 7 consecutive days.
4. Take a complete set of cultures from nares and previously positive sites 72 hrs after decolonization

If 1st set of samples is negative repeat cultures 48 hrs. later
5. Three negative cultures are required before the patient is cleared of MRSA and can be taken out of isolation.

NB: These results will be assessed by the ICP

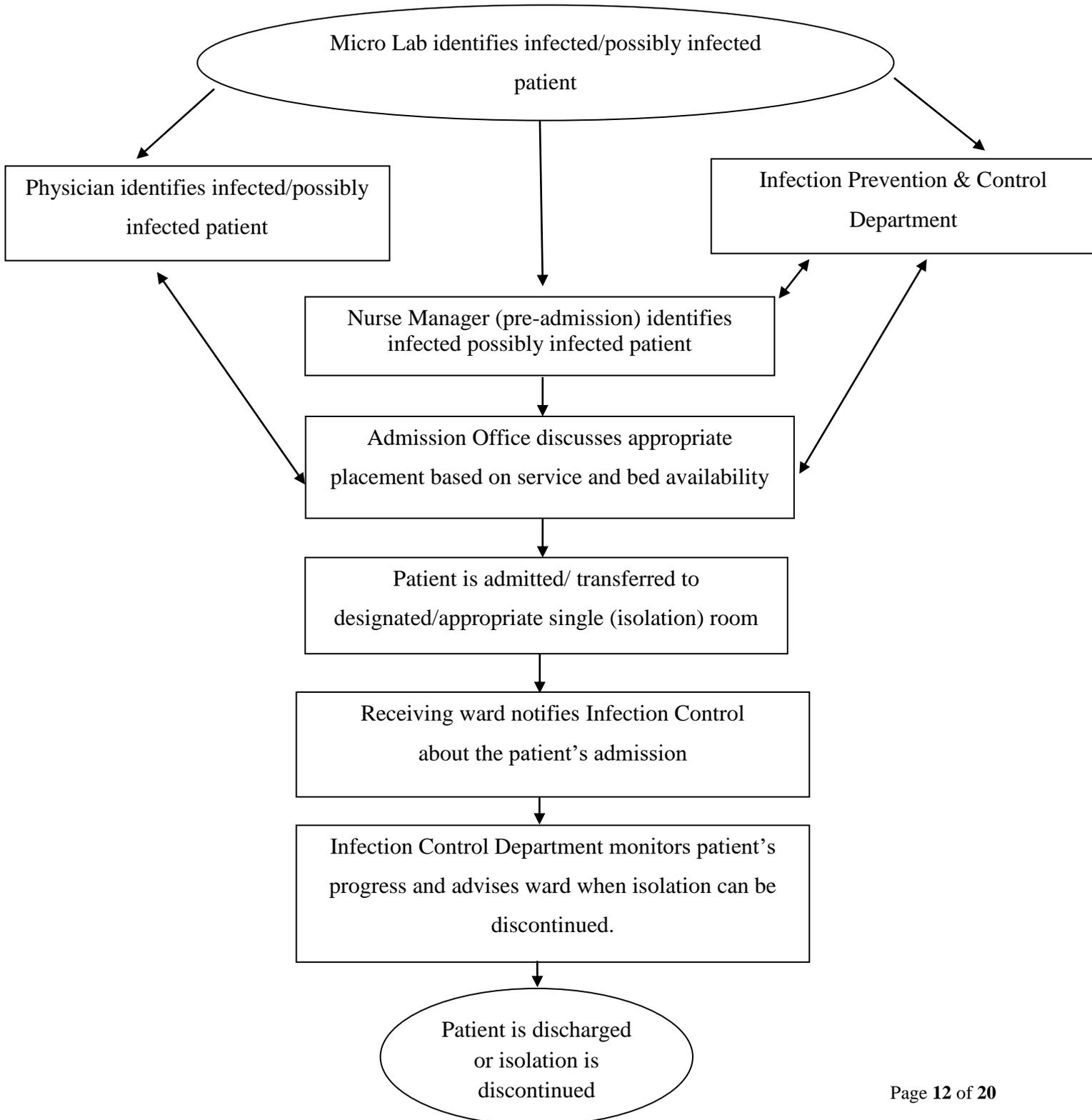
NOTES:

The patient must not be on antibiotics at the time of screening.
If any swab is positive, stop the screening process until further assessment.



Appendix 2. Isolation Flowchart

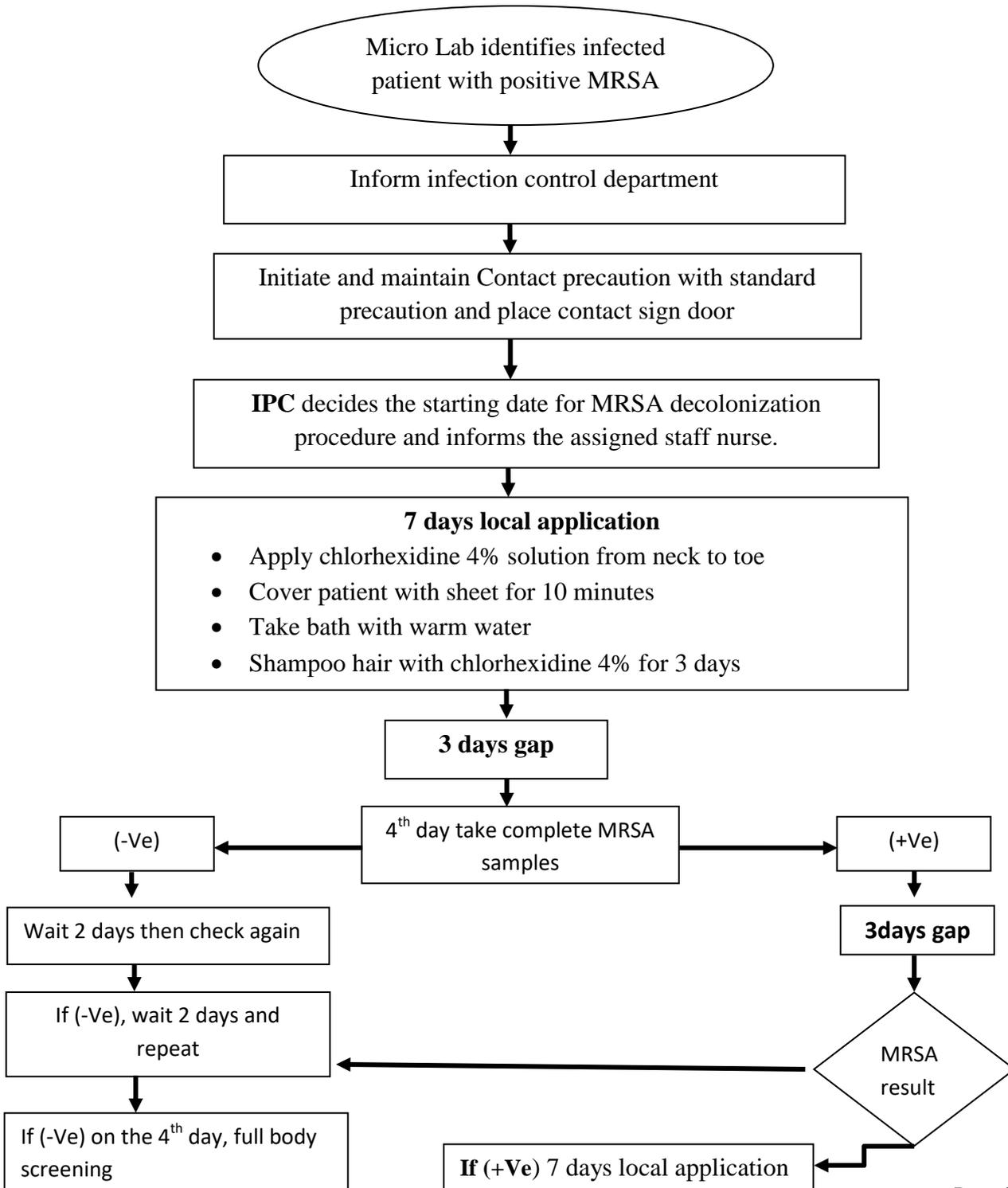
Infection Control Protocol for the Use of Single Rooms for Isolation





Appendix 3. Management of Patient with MRSA Infection or Colonization

Infection control protocol for MRSA Decolonization





Appendix 4. Terminal Cleaning of Isolation Room

Terminal cleaning is the thorough, extensive cleaning and disinfection of the environmental surfaces including points that are hard to reach. It is indicated after patient is discharged from an isolation room. This procedure should be carried out after completion of maintenance work (*Filter change and duct cleaning only for airborne isolation*).

1. All beds in respected areas (Isolated & non-isolated) should be cleaned three (3) times (estimated time: 2-3 hours).
2. First, cleaning with soap and water from top to bottom until dry.
3. Second, cleaning with haz-tab (Hypochloride solution) from top to bottom until dry.
(**Note:** Dilution of haz-tab tablets will be **1 tablet in 1.5 liters**)
4. Third, cleaning with haz-tab from top to bottom until dry.
5. Isolation room (floor, wall, ceiling, and bathroom) should be cleaned by cleaner and assessed by cleaning supervisor, infection control practitioners and staff nurse.
6. Medical devices (monitors and equipment) should be cleaned by medical orderly by using wipe disinfection.



Appendix 5. Single Room Request Form

Ministry of Health
Al Masarra Hospital

REQUEST FOR SINGLE/PRIVATE ROOM ON MEDICAL GROUND OR FOR ISOLATION

Part I

(To be completed by senior most physician recommending the single room facility)

NAME of Patient: _____

IP Number: _____

Ward/Bed No.: _____

Date of Admission: _____

Diagnosis: _____

Period Recommended for stay in single/private room:

From: _____ **To:** _____ **To be extended up to:** _____

Name, Designation and Signature of Physician: _____

Part II

Signature of Infection Control In-charge: _____

Signature of Executive Director: _____

Part III

Admitted in single/private room on: _____

Name and Signature of Nurse In-charge of the Ward: _____



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Appendix 6. Audit Tool

Department: _____

Date: _____

S.N.	Audit Process	Standard / Criteria	Yes	Partial	No	N/A	Comment
1.	Interview Document review	Is the staff informing the Infection Prevention & Control Department of the positive or possible case of MDRO?					
2.	Observation Interview	Is the staff initiating contact precautions in addition to standard precaution?					
3.	Observation Interview	Is the patient kept in isolation room or cohorted with another patient with same organisms?					
4.	Observation Interview Document review	Is the staff placing a sign on the cubicle or curtain of the patient's cohort?					



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5.	Observation Interview	Is the staff ensuring easy access to PPE and alcohol-based hand rub?					
6.	Observation Interview	Is the staff practicing strict precautions between interactions with patients in the same room?					
7.	Observation Interview	Is the staff transferring patient to the single room as soon as possible?					
8.	Observation Document review	Is the staff placing a contact isolation sign on the outside of the isolation room door?					
9.	Observation Interview	Is the staff practicing strict hand hygiene?					
10.	Observation Interview	Is the staff cohorting non-critical item such as stethoscopes and pressure cuffs with the patient?					
11.	Observation Interview	Is the staff storing minimum amount of supplies in the patient's room?					
12.	Observation Interview	Is the staff limiting the patient's activity outside the room to treatments or tests?					
13.	Observation Interview	Is the staff notifying receiving departments/wards (e.g. radiology, endoscopy, clinics) of the isolation status when the patient must be transported for treatment or test?					



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14.	Observation Interview	Is the staff coordinating with infection control department before starting decolonization for the MRSA patient?					
15.	Observation Interview	Is the assigned staff ensuring the terminal cleaning of the isolation room and equipment as per housekeeping procedures?					
16.	Interview	Do all staff understand and comply with isolation precautions and hand hygiene protocol?					
17.	Document review Interview	Are all staff trained about MDROs guideline?					



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Appendix 7. Document Request Form

Document Request Form			
Section A: Completed by Document Requester			
1. Requester Details			
Name	Wafa Al Balushi	Date of Request	April 2022
Institute	Al Masarra Hospital	Mobile	95821833
Department	Infection Control and Sterilization Service	Email	wafa22oman@gmail.com
The Purpose of Request			
<input type="checkbox"/> Develop New Document	<input checked="" type="checkbox"/> Modification of Document	<input type="checkbox"/> Cancelling of Document	
1. Document Information			
Document Title	Guideline for Infection Prevention and Control of Multidrug Resistant Organisms (MDRO)		
Document Code	AMRH/IC/GUD/001/Vers.02		
Section B: Completed by Document Controller			
<input checked="" type="checkbox"/> Approved	<input type="checkbox"/> Cancelled	<input type="checkbox"/> Forward To:.....	
Comment and Recommendation:			
Name	Kunooz Al Balushi	Date	April 2022
Signature		Stamp	





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Appendix 8. Document Validation Checklist

Document Validation Checklist					
Document Title: Guideline for Infection Prevention and Control of Multidrug Resistant Organisms (MDRO)			Document Code: AMRH/IC/GUD/001/Vers.02		
No	Criteria	Meets the Criteria			Comments
		Yes	No	N/A	
1.	Approved format used				
1.1	Clear title – Clear Applicability	✓			
1.2	Index number stated	✓			
1.3	Header/ Footer complete	✓			
1.4	Accurate page numbering	✓			
1.5	Involved departments contributed	✓			
1.6	Involved personnel signature /approval	✓			
1.7	Clear Stamp	✓			
2.	Document Content				
2.1	Clear purpose and scope	✓			
2.2	Clear definitions	✓			
2.3	Clear policy statements (if any)			✓	
3.	Well defined guidelines and steps				
3.1	Guidelines in orderly manner	✓			
3.2	Guidelines define personnel to carry out step	✓			
3.3	Guidelines define the use of relevant forms	✓			
3.4	Guidelines to define flowchart	✓			
3.5	Responsibilities are clearly defined	✓			
3.6	Necessary forms and equipment are listed	✓			
3.7	Forms are numbered	✓			
3.8	References are clearly stated	✓			
4.	General Criteria				
4.1	Policy is adherent to MOH rules and regulations	✓			
4.2	Policy within hospital/department scope	✓			
4.3	Relevant policies are reviewed	✓			
4.4	Items numbering is well outlined	✓			
4.5	Used of approved font type and size	✓			
4.6	Language is clear, understood and well structured	✓			
Recommendations..... For implementation More revision To be cancelled.....					
Reviewed by: <u>Kunooz Al Balushi</u>			Reviewed by: <u>Ruvilee Ramel-Bueno</u>		

