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### SOP Objective

To ensure that patients with MDRGNOs are cared for appropriately and actions are taken to minimise the risk of cross-infection.

This SOP applies to all staff employed by NHS Greater Glasgow & Clyde and locum staff on fixed term contracts and volunteer staff.


### KEY CHANGES FROM THE PREVIOUS VERSION OF THIS SOP

- Updated wording in linen and patient clothing sections
- Updated Appendix 1

### Document Control Summary


Approved by and date	Board Infection Control Committee 15 <sup>th</sup> December 2020
Date of Publication	25 <sup>th</sup> January 2021
Developed by	Infection Prevention and Control SOP Sub-Group
Related Documents	National IPC Manual NHS GGC Decontamination SOP NHS GGC Hand Hygiene SOP NHS GGC SOP Cleaning if Near Patient Equipment NHSGGC SOP Twice Daily and Terminal Clean of Isolation Rooms NHS GGC SOP Terminal Clean of Isolation Rooms and Ward NHS GGC Waste Management Policy
Distribution/ Availability	NHSGGC Infection Prevention and Control Web site <a href="http://www.nhsggc.org.uk/infectioncontrol">www.nhsggc.org.uk/infectioncontrol</a>
Lead	Lead ICD
Responsible Director	Board Infection Control Manager

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## 1. Responsibilities

### Health Care Workers (HCW) must:

- Follow this SOP.
- Inform a member of the Infection Prevention and Control Team (IPCT) if this SOP cannot be followed.
- Implement Care Checklist

### Senior Charge Nurses (SCN) / Managers must:


- Support HCWs and Infection Prevention and Control Teams (IPCTs) in following this SOP.
- Advise HCWs to contact the Occupational Health Service (OHS) as necessary.

### Infection Prevention and Control Teams (IPCTs) must:

- Keep this SOP up-to-date.
- Provide education opportunities on this SOP.

### Occupational Health Service (OHS) must:


- Provide staff with advice as appropriate
- Support an Incident Management Team (IMT) with necessary investigations as required

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## 2. General Information on Multi-Resistant Organisms (MDRO)

<b>Communicable Disease / Alert Organism</b>	<p>Multi-drug resistant bacteria are bacteria that are resistant to at least three different antibiotics. These bacteria are commonly found in the gut, where they do no harm; however, they can cause infection at other body sites, mainly in patients who are vulnerable due to other underlying diseases, injury or hospitalisation. Infection often happens when the bacteria enter the body through an open wound or via a medical device such as a catheter. These infections are difficult to treat, and can cause additional pain to patients with slow wound healing and other complications such as pneumonia or infection in the blood. This can prolong the length of stay in hospital and, in some cases, can cause death.</p> <p>MDROs include the following;  Extended-spectrum beta-lactamase (ESBL) producers;  Vancomycin-resistant Enterococci (VRE),  Carbapenem-resistant organisms (CRO)  (For CPE, MRSA and XDR Tb, please see appropriate IPC SOP).</p> <p>Also included in this SOP are those exceptional organisms listed in <a href="#">Appendix 1</a></p>
<b>Clinical Condition</b>	Patients may be colonised or infected with these organisms. Infections include but are not limited to bloodstream infections, device-related infections, pneumonia and wound infections.
<b>Mode of Spread</b>	<p>This group of organisms are spread by multiple routes depending on their location in the body and the type of infection.</p> <p>Contact: Via hands or contaminated equipment and environment.</p> <p>Droplet: With respiratory infection, droplets from the respiratory tract can travel short distances during coughing and sneezing</p> <p>Airborne: Some respiratory MDROs spread by the airborne route while others can become airborne during aerosol generating procedures.</p>
<b>Incubation period</b>	No specific incubation period.
<b>Period of Communicability</b>	As long as the organism is isolated.

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<b><i>Persons most at-risk</i></b>	Patients in intensive care units, Renal Units, High Dependency Units (HDU) and haemato-oncology who have had a variety of antibiotics and/ or prolonged antibiotic therapy. Patients who have received medical care overseas
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### 3. Transmission Based Precautions for MDROs

<b>Accommodation (Patient Placement)</b>	Patients with infection should be placed in a single ensuite room with the door close. Where isolation facilities are unavailable contact a member of the IPCT who will provide advice on the most appropriate placement. Patients colonised with VRE/ESBL should be discussed with a member of the IPCT for the most suitable accommodation.
<b>Care checklist</b>	Yes
<b>Clinical Waste</b>	Non-sharps waste should be designated as clinical/ healthcare waste and placed in an orange waste bag. Please refer to the <a href="#">NHSGGC Waste Management Policy</a> .
<b>Contacts</b>	Contacts may be screened on the advice of a member of the IPCT.
<b>Domestic Advice</b>	Domestic staff must follow the SOP for Twice Daily and Terminal Clean of Isolation Rooms and ward. Cleans should be undertaken at least four hours apart. <a href="#">NHSGGC Twice Daily Clean of Isolation Rooms SOP</a> <a href="#">NHSGGC Terminal clean of Isolation Room and Ward</a>
<b>Equipment</b>	Where practical allocate dedicated equipment, e.g. own washbowl, commode, moving sling or slip-sheet. Decontaminate equipment as per the <a href="#">NHSGGC Decontamination SOP</a> .
<b>Hand Hygiene</b>	Hand hygiene is the single most important measure to prevent cross-infection. Hands must be decontaminated before and after each direct patient contact. Refer to the <a href="#">NHSGGC Hand Hygiene SOP</a> .
<b>Last Offices</b>	Please see last Offices in the National Infection Prevention and Control Manual.
<b>Linen</b>	Treat used linen as soiled/ infected, i.e. place in a water soluble bag then a secondary clear plastic bag tied and then into a hamper style laundry bag. (Brown polythene bag used in mental health areas) Please refer to <a href="#">National Laundry guidance</a>
<b>Moving between wards, hospitals and departments (including theatres)</b>	The patient should only be transferred to another department for essential procedures and investigations. All patient movement should be kept to a minimum. Prior to transfer, the ward should inform the receiving department, ward, hospital, health board, of the patient's infectious condition. The receiving area should put in place arrangements to minimise contact with other patients and arrange for additional domestic cleaning if required.
<b>Notice for Door</b>	Yes, yellow IPC notice

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<b><i>Patient Clothing</i></b>	If relatives or carers wish to take personal clothing home, staff must place soiled clothing into a domestic alginate bag and ensure that a <a href="#">Washing Clothes at Home Leaflet</a> is issued and documented in patients notes
<b><i>Patient Information</i></b>	Inform the patient/ parent/ guardian/ next-of-kin (as appropriate) of the patient's condition and the necessary precautions. Answer any questions and concerns they may have.
<b><i>Personal Protective Equipment (PPE)</i></b>	To prevent spread through direct contact PPE (disposable gloves and yellow apron) must be worn for all direct contact with the patient or the patient's environment/equipment. If there is a risk of splashing/spraying of blood or body fluid a fluid repellent surgical face mask and eye protection should be worn. <b>Fit tested FFP3 mask</b> , disposable yellow apron and gloves must be worn if Aerosol Generating Procedures (AGP) are undertaken on a patient with a <b>MDRO respiratory infection</b> .
<b><i>Precautions Required until</i></b>	Please contact your local IPCT for advice on when/if transmission based precautions can be discontinued.
<b><i>Specimens Required</i></b>	Please contact your local IPCT for advice on which specimens are required and when (including readmission).
<b><i>Terminal Cleaning of Room</i></b>	Refer to <a href="#">NHSGGC SOP for Terminal Clean of Isolation Rooms and ward</a> .
<b><i>Visitors</i></b>	No specific restrictions. Encourage any visitors to undertake hand hygiene before and after visiting.

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#### 4. Evidence Base

[HPS \(2018\) National Infection Prevention and Control Manual](http://www.nhsggc.org.uk/your-health/infection-prevention-and-control/)




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## Appendix 1

Organisms	Exceptional phenotypes
<b>Exceptional resistance phenotypes of Gram-negative bacteria</b>	
Any Enterobacteriaceae	Resistant to colistin 1 (except <i>Proteus</i> spp, <i>Providencia</i> spp, <i>Morganella</i> spp and <i>Serratia marcescens</i> ) Resistant to meropenem or is a carbapenemase producer Resistant to ceftazidime-avibactam
<i>Salmonella typhi</i>	Resistant to fluoroquinolones and/or carbapenems or azithromycin
<i>Pseudomonas aeruginosa</i> and <i>Acinetobacter</i> spp.	Resistant to colistin 1 Resistant to ceftolozane-tazobactam Resistant to a meropenem/imipenem AND ceftazidime AND piperacillin-tazobactam
<i>Acinetobacter baumannii</i>	Resistant to colistin 1 Resistant to meropenem or imipenem
<i>Stenotrophomonas maltophilia</i>	Resistant to co-trimoxazole
<i>Haemophilus influenzae</i>	Resistant to any 3rd/4th/5th generation cephalosporins or carbapenems
<i>Moraxella catarrhalis</i>	Resistant to any 3rd/4th/5th generation cephalosporins, carbapenems or fluoroquinolones
<i>Neisseria meningitidis</i>	Resistant to meropenem, any 3rd generation cephalosporins, fluoroquinolones or rifampicin
<i>Neisseria gonorrhoeae</i>	Resistant to spectinomycin and / or azithromycin and/or third-generation cephalosporins
<b>Exceptional resistance phenotypes of Gram-positive bacteria</b>	
<i>Staphylococcus aureus</i>	Resistant to vancomycin, teicoplanin, daptomycin (MIC > 4 mg/L), 2 linezolid, tedizolid, quinupristin-dalfopristin, tigecycline, ceftaroline or ceftobiprole
Coagulase-negative staphylococci	Resistant to vancomycin, daptomycin (MIC > 4 mg/L), 2 linezolid, tedizolid, quinupristin-dalfopristin, tigecycline, ceftaroline or ceftobiprole
<i>Corynebacterium</i> spp.	Resistant to vancomycin, teicoplanin or linezolid
<i>Streptococcus pneumoniae</i>	Resistant to carbapenems, vancomycin, teicoplanin, linezolid or rifampicin. Also isolates with high level penicillin resistance (MIC > 2 mg/L) and those intermediate or resistant to 3rd generation cephalosporins (MIC > 0.5 mg/L)
Group A, B, C and G $\beta$ -haemolytic streptococci	Resistant to penicillin, cephalosporins, vancomycin, teicoplanin, dalbavancin, oritavancin, daptomycin, linezolid, tedizolid or tigecycline
<i>Enterococcus</i> spp.	<b><i>E. faecalis</i>:</b> Resistant to ampicillin/amoxicillin or daptomycin (MIC > 2 mg/L)

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	<b><i>E. faecium:</i></b> Resistant to daptomycin (MIC > 4 mg/L) <b>All enterococci:</b> Resistant to tigecycline or linezolid
<b>Exceptional resistance phenotypes of anaerobes</b>	
<i>Bacteroides</i> spp.	Resistant to metronidazole
<i>Clostridium difficile</i>	Resistant to metronidazole, vancomycin.
<b>Exceptional resistance phenotypes of anaerobes</b>	
<i>Bacteroides</i> spp. 3	Resistant to metronidazole
<i>Clostridioides difficile</i>	Resistant to metronidazole or vancomycin
<b>Exceptional resistance phenotypes of <i>Candida</i> species</b>	
<i>Candida</i> spp.	Resistant to amphotericin B or any echinocandin
<i>Candida albicans</i>	Resistant to any azole (invasive isolates)
<i>Aspergillus fumigatus</i>	Resistant to amphotericin B, echinocandins or azoles (excluding fluconazole)

**Notes**

- Colistin resistance should be determined locally by use of broth microdilution testing prior to sending to Glasgow Reference Laboratories for further confirmatory testing
- Daptomycin MIC of > 4 mg/L is higher than that stated by EUCAST in relation to daptomycin resistance in staphylococci. This may be reviewed in the future.
- This is not an exhaustive list of species where metronidazole resistance would be exceptional. N.B some anaerobes are intrinsically resistant to metronidazole e.g. *Actinomyces* spp.