



**Community Infection Prevention and Control  
Guidance for Health and Social Care**

# **Multi-Resistant Gram-Negative Bacteria including ESBL (Extended Spectrum Beta Lactamase) and CPE (carbapenemase-producing Enterobacteriaceae)**

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**MARGNB INCLUDING ESBL AND CPE**

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## MRGNB, including ESBL and CPE

### 1. Introduction

The increasing prevalence of antibiotic resistant micro-organisms, especially those with multiple resistance, is an international concern.

Antibiotic resistance makes infections difficult to treat. It may also increase the length of severity of illness, the period of infection, adverse reactions (due to the need to use less safe alternative drugs), length of hospital admission and overall costs.

Many bacteria are normally found in the bowel. Not all are resistant to antibiotics and not all will cause serious illness. Species of bacteria commonly found include *Escherichia coli* (*E.Coli*), Klebsiella, Proteus, Pseudomonas Enterobacter and Acinetobacter. Collectively these bacteria are referred to as Gram-negative bacilli (GNBs). These bacteria, under certain circumstances can become resistant to antibiotics and may require infection control management and are referred to as Multi-resistant Gram-negative bacteria (MRGNB).

Some MRGNB contain beta-lactamases (extended spectrum beta lactamases or ESBL's) which can destroy/inactivate even broad spectrum antibiotics such as cefuroxime and cefotaxime.

New MRGNB known as CPE (carbapenemase-producing Enterobacteriaceae) have recently been identified. These resistant strains of bacteria produce an enzyme that destroys the powerful group of antibiotics such as imipenem which is used in hospitals. Until now, these have been the 'last resort' antibiotics medics have relied on when other antibiotics have failed to treat infections.

### 2. Key points

- Gram-negative bacteria (GNB) are commonly found in the gastro-intestinal tract, in water and in soil and can be part of the transient flora on the hands of health and social care workers and on equipment used in health and social care.
- Multi-resistant Gram-negative bacteria (MRGNB) are found most frequently in service users who have received broad spectrum antibiotics and where service users have diminished immunity.
- The bacteria commonly achieve antibiotic resistance by producing an enzyme, beta-lactamase. This counters the effect of specific antibiotics.

- The genes that carry antibiotic resistance can spread to other bacteria and control requires comprehensive infection control and antibiotic policies.
- They are likely to be passed onto others or self, via the faecal/oral route.
- MRGNB can cause urinary tract infections, pneumonia and surgical site infections. However, the majority of service users/service users with MRGNB are colonised which means bacteria are present but they do not have symptoms of infection. MRGNB are usually present in stool and urine specimens, as they do not have active infection antibiotic treatment is not required
- Someone who is colonised with MRGNB does not pose a risk to healthy people but are a risk to vulnerable service users.

### 3. Admission to a health and social care setting

There is no justification for refusing to admit a person with MRGNB into any health and social care setting.

### 4. Routes of transmission

- Direct spread via hands of health and social care workers.
- Equipment that has not been appropriately decontaminated.
- Environmental contamination.

Although MRGNB can be spread on equipment, the most common route is by contact with an infected or colonised service user. Therefore, the importance of good hand hygiene before and after direct service user contact is essential.

### 5. Treatment

Giving antibiotics to asymptomatic (colonised) service users to clear the organism is not recommended because it is not actually causing an infection. Treatment is only advocated for those service users who have clinical signs of infection, advice on antibiotic treatment can be obtained from the Consultant Microbiologist.

### 6. Clearance specimens

Clearance specimens, including faecal samples for CPE, are not required in a community health and social care setting. Repeat specimens should only be

taken if the service user has clinical signs of an infection, e.g., pyrexia, pain on micturition.

## 7. Precautions for MRGNB

- Use of Standard precautions at all times for all service users is essential to prevent the spread of MRGNB.
- Strict hand hygiene is essential, using liquid soap, warm water and paper towels and or the use of alcohol handrub.
- Service users in a care home with MRGNB do not usually require isolation unless they have an active infection, in which case they should be isolated until the infection has resolved, or if they have diarrhoea they should be isolated until symptom free for 48 hours. Staff should wear disposable gloves and apron when entering a service user's room when they are isolated.
- A service user with MRGNB present in their urine who is not catheterised and is continent with no symptoms of a urinary tract infection is very unlikely to present a risk to others.
- Service users can visit communal areas, e.g., dining room, television room and can mix with other service users. Service users in their own home can socialise in and outside of their home without restrictions.
- Hand hygiene is essential after direct contact with a service user or their surroundings using either liquid soap and warm water or alcohol handrub.
- Service users should be encouraged to wash hands or use hand wipes after using the toilet and before meals.
- Disposable gloves and apron should be worn when in contact with body fluids.
- Normal laundry procedures are adequate, however, if laundry is soiled with urine or faeces it should be treated as infected. Items that are soiled should be washed at the highest temperature the item will withstand.
- Staff should ensure if the service user has any wounds they are covered with an impermeable dressing.
- No special precautions are required for crockery/cutlery and they should be dealt with in the normal manner.
- In a health and social care setting, waste contaminated with body fluids should be disposed of as infectious waste (please refer to the Waste Management Guidance for further details).
- There is no need to restrict visitors, but they should be advised to wash hands or use alcohol handrub on leaving.
- Service users should not be prevented from visiting day centres, etc., and may socialise outside the home.

- If a service user requires hospital admission, the hospital staff should be informed of the person's MRGNB status. This will enable a risk assessment to be undertaken to determine whether the service user should be isolated on admission, see Section 9 below.

## 8. Environmental cleaning

- In a care home setting, MRGNB can easily be removed from a service user's room by at least daily cleaning with a chlorine-based disinfectant, e.g., Milton at a concentration of 1,000 parts per million (ppm).
- Showers/baths should be cleaned with warm water and detergent or a cream cleanser followed by a hypochlorite solution, e.g., Milton at a dilution of 1,000 ppm (1 part Milton to 20 parts water).
- There are no special requirements for cleaning a service user's own home unless they have an active infection, e.g., diarrhoea, wound infection, then toilets, baths, showers and medical equipment, such as commodes, walking frames, wheel chairs, should be decontaminated with detergent and warm water, followed by disinfection with a chlorine-based disinfectant at 1,000 ppm, e.g., household bleach, until the infection or diarrhoea has resolved.
- If a service user has attended a GP practice for a procedure, then the treatment couch and immediate area should be cleaned with detergent and warm water followed by a hypochlorite solution at a dilution of 1000 ppm, e.g., Chlor-Clean, Haz tabs, Presept or a disinfectant wipe. If possible, it is recommended that service users with MRGNB are seen last on the clinic list to allow for adequate cleaning between patients.
- There are no special transport requirements.

## 9. Transfer of service users between health and social care settings

- Staff preparing to transfer a service user between one health and social care environment to another, must complete the Inter-health and Social Care Infection Control Transfer Form. This must accompany the service user, Essential Steps to safe, clean care (Department of Health 2007). See Appendix 1.
- There are no special transport requirements.

## 10. Information for service users and visitors in health and social care settings

An information leaflet/factsheet about MRGNB should be available and provided as appropriate.

## 11. Additional IPC resources

The North Yorkshire and York Community Infection Prevention and Control (IPC) team have produced a wide range of innovative educational and other IPC resources, including support for MRGNB, e.g., MRGNB factsheet for service users. These resources are designed to assist your organisation in achieving compliance with the Health and Social Care Act 2008 and CQC requirements. Further information on these high quality evidence-based resources is available at [www.infectionpreventioncontrol.co.uk](http://www.infectionpreventioncontrol.co.uk)

## 12. References

Department of Health (2010) *The Health and Social Act 2008. Code of Practice for the Prevention and control of healthcare associated infections*

Department of Health (2007) *Essential Steps to safe, clean care. Reducing healthcare associated infections (HCAI) in primary care trusts, mental health trusts, learning disability organisations, independent healthcare facilities, care homes, hospices, GP practices and ambulance services*

Department of Health (2000) *UK Antimicrobial Resistance Strategy and Action Plan*

Public Health England (2013) *Acute trust toolkit for the early detection, management and control of carbapenemase-producing Enterobacteriaceae*

## 13. Appendices

Appendix 1: Inter-Health and Social Care Infection Control Transfer Form



**Inter-Health and Social Care Infection Control Transfer Form**

*The Health and Social Care Act 2008: Code of Practice on the prevention and control of infections and related guidance (Department of Health 2010)*

"A registered provider must ensure that it provides suitable and sufficient information on a service user's infection status whenever it arranges for that person to be moved from the care of one organisation to another, or from a service user's home, so that any risks to the service user and others from infection may be minimised. If appropriate, providers of a service user's transport should be informed of any infection."

**HOW TO USE THIS FORM**

- Complete the form for every service user transfer to another health and social care provider. Please refer to the 'Inter-Health and Social Care Transfer Guidance' for full guidance on transfers and discharges at [www.infectionpreventionandcontrol.co.uk](http://www.infectionpreventionandcontrol.co.uk).
- Complete the form prior to booking ambulance or other transport.
- A 'confirmed risk' service user is one who has been confirmed as being colonised or infected with organisms such as MRSA, glycopeptides-resistant enterococci, pulmonary tuberculosis and enteric infections including *Clostridium difficile*.
- Service users with 'suspected risks' include those who are awaiting laboratory tests to identify infections/organisms or who have been in recent contact with infected service users, e.g., in close proximity to an infected service user.
- Service users with 'no known risks' do not meet either of the two criteria above.
- For service users with diarrhoeal illness, please use the Bristol Stool Form Scale to indicate the frequency and type of stools over the past week. Please indicate in the 'confirmed' or 'suspected' risk box if the diarrhoea is known or suspected to be infectious.
- Please use the 'Other information' box to list personal protective equipment being used to assist in service user care. This equipment may include gloves, aprons or masks.
- Please print your name and contact details in the box provided.
- This form should accompany the service user during transfer and be given to the receiving facility. A copy should also be retained for evidence purposes and filed in the notes.

<p><b>Service user details</b> (insert label if available)</p> <p>Name:</p> <p>Address:</p> <p>NHS number:</p> <p>Date of birth:</p>	<p><b>Consultant:</b></p> <p><b>GP:</b></p> <p><b>Current patient location:</b></p> <hr/> <p><b>Transferring facility:</b> (e.g. hospital – ward / care home)</p> <p>Contact No:</p> <p>Date of Transfer:</p> <p>Have ICT been informed of the transfer of those service users with a confirmed/suspected risk: Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/></p>															
<p><b>Receiving facility:</b> (e.g. hospital – ward / care home / district nurse)</p> <p>Contact no:</p> <p>Have the following been informed of the transfer of those service users with a confirmed/suspected risk:</p> <p>Receiving ICT*: Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/></p> <p>Transport provider: Yes <input type="checkbox"/> No <input type="checkbox"/> N/A <input type="checkbox"/></p> <p>(*ICT = Infection Control team or Community Infection Prevention and Control team)</p>	<p><b>Is the service user an infection risk?</b> <i>Please tick most appropriate box and give confirmed or suspected organism</i></p> <p><input type="checkbox"/> Confirmed risk      Organism:</p> <p><input type="checkbox"/> Confirmed risk      Organism:</p> <p><input type="checkbox"/> Suspected risk      Organism:</p> <p><input type="checkbox"/> No known risk</p> <p>Service user exposed to others with infection: (e.g., D&amp;V)      Yes <input type="checkbox"/> No <input type="checkbox"/></p>															
<p><b>If service user has diarrhoeal illness, please indicate bowel history for last week:</b> (based on Bristol Stool Form Scale)</p> <p>Is diarrhoea thought to be of an infectious nature?      Yes <input type="checkbox"/> No <input type="checkbox"/></p>																
<p><b>Relevant specimen results – MRSA (including admission screens), multi-resistant gram negative bacteria (e.g., ESBL), <i>Clostridium difficile</i>:</b></p> <table border="1" style="width: 100%;"> <tr> <td style="width: 20%;">Specimen:</td> <td style="width: 20%;"></td> <td style="width: 20%;"></td> <td style="width: 20%;"></td> <td style="width: 20%;"></td> </tr> <tr> <td>Date:</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>Result:</td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		Specimen:					Date:					Result:				
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<p><b>Treatment information including antimicrobial therapy:</b></p>																
<p><b>Other information:</b></p>																
<p>Is the service user aware of their diagnosis/risk of infection?      Yes <input type="checkbox"/> No <input type="checkbox"/></p>																
<p>Does the service user require isolation?      Yes <input type="checkbox"/> No <input type="checkbox"/></p> <p><b>(If the service user requires isolation, please phone the receiving unit in advance.)</b></p>																
<p>Form completed by:      Contact No:      Date:</p>																

For further advice, please contact your local Community Infection Prevention and Control or Public Health England Team North Yorkshire and York Community Infection Prevention and Control January 2015