Management of patients colonised or infected with Carbapenemase-producing Organisms (CPOs) in a healthcare setting
Title of document: Management of patients colonised or infected with Carbapenemase-producing Organisms (CPOs) in a healthcare setting

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Scope: Organisation Wide

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Policy application / Target Audience: Throughout NHS Ayrshire and Arran

Policy Statement: It is the responsibility of all staff to ensure that they consistently maintain a high standard of infection control practice.

Last reviewed: New policy

Agreed by: Infection Prevention and Control Policy Review Group

Electronic approval of consultation process by: Professor Hazel Borland Nurse Director

Date: September 2017

REFERENCES


3. Health Protection Scotland (2016), Patient Screening for Carbapenemase Producing Enterobacteriaceae (CPE) - Leaflets for Healthcare Workers and Patients

4. Health Protection Scotland (2016), Toolkit for the early detection, management and control of Carbapenemase-producing Enterobacteriaceae in Scottish Acute Settings
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### 1.0 WHAT ARE CARBAPENEMASE-PRODUCING ORGANISMS (CPOs)

| Organism | CPOs are organisms that are extremely resistant to antibiotics. These bacteria carry a gene that breaks down carbapenem antibiotics. Infections caused by CPOs are associated with high rates of morbidity and mortality. Treatment of these infections is increasingly difficult as these organisms are often resistant to many and sometimes all available antibiotics. CPOs include routine pathogens such as *E. coli*, *Klebsiella* sp., *Proteus* sp. and *Enterobacter* sp. These organisms are some of the most common causes of many infections such as urinary tract infections, intra-abdominal infections and bloodstream infections, all of which can be life-threatening. CPOs may colonise patients, meaning they are microbiologically positive but show no signs of infection. CPOs do not frequently present in healthcare. |
| Incubation period | Unknown - an individual may be long term colonised with a CPO and never develop infection. |
| Period of communicability | Whilst colonised or infected with a CPO. |
| Individuals most at risk | - Patients who have received healthcare, including dialysis, outside Scotland in the previous 12 months  
- Patients previously positive for a CPO  
- Close contact with a known CPO positive individual (see definition of close contact in [Clinical Risk Assessment (CRA)](#)) |
| Is it a notifiable organism | Yes - Initial notification should be made by telephone to the Health Protection Team (HPT) at Afton House, Ailsa Campus on 01292 885858 or, out of hours, the on-call Consultant in Public Health Medicine (CPHM) via University Hospital Crosshouse switchboard (01563 521133). The HPT should then also be formally notified within 3 days using the Scottish Care Information (SCI) system or SCI form. |
| Does the IPCT need to be informed | Yes: Patients with suspected/confirmed CPO colonisation/infection, or who meet the CRA for screening, must have all relevant infection prevention and control precautions implemented. You must then inform the Infection Prevention and Control Team (IPCT) by phoning (01563) 825765 or by emailing the IPCT mailbox InfectionControl@aapct.scot.nhs.uk.  
If outwith office hours the on-call Consultant Microbiologist must be contacted. |
2.0 STAFF RESPONSIBILITY

Staff members responsible for the care and assessment of patients coming into healthcare settings have an obligation to deliver care following the principles of Standard Infection Control Precautions (SICPs) (see HPS National Infection Prevention and Control Manual).

Staff within NHS Ayrshire and Arran’s acute hospitals, must carry out a CRA as identified within the “Patient Profile” to determine patients potentially at risk of CPO colonisation or infection. If the CRA exposes a risk of CPO, Transmission Based Precautions (TBPs) (see HPS National Infection Prevention and Control Manual) in addition to SICPs must be implemented until a laboratory confirmed result is available. Once laboratory results are available follow guidance as per section 3.1.

2.1 Clinical Risk Assessment (CRA)

All patients admitted, planned and emergency, with the intention of an overnight stay to an acute hospital (UHA and UHC only) must have a CRA completed. Non-acute hospitals and GP units will not complete the CRA. The CRA should take place at the point of admission to a ward or in the pre-assessment area (pre-op).

Note: If the patient has ever been previously positive for a CPO, the admission CRA MUST STILL BE COMPLETED and the patient managed as a confirmed CPO case.

The CRA defines a suspected case based on the identification of at least one of the following risk factors:

1. Been transferred from a hospital outside Scotland
2. Been hospitalised outside Scotland in the last 12 months
3. Received holiday dialysis outside Scotland in the last 12 months
4. Been previously positive for a CPO at any body site
5. Been a close contact of a person who has been colonised or infected with a CPO

A close contact is defined as a person living in the same house, sharing the same sleeping space (room or hospital bay); or sexual partner.

If the patient answers ‘yes’ to one or more questions, they must be managed as a suspected case and an admission screen obtained.
3.0 ADMISSION SCREENING AND RESULTS

Advise the patient (and relatives if appropriate) the reasons for isolation and the requirement for samples (provide patient with CPO information leaflet).

An admission screen will consist of:

- a rectal swab, ensuring visible faecal material on the swab (black charcoal)
- OR
- a faecal sample - if a rectal swab is not feasible/acceptable
- AND (if applicable)
- a wound swab (black charcoal)
- catheter specimen urine (CSU)

Note: All samples must be sent timeously to the laboratory and investigations required/clinical details must include “CPO screening sample”.

It should also be noted that the renal dialysis units have a separate screening guideline.

3.1 Microbiology results

Positive
If CPO laboratory confirmed, manage patient with SICPs and TBPs as outlined below. If positive from a pre-assessment (pre-op) screen, this can be discussed between the operating specialties and the Consultant Microbiologist/IPCT.

Negative
A patient will only be classed as CPO negative after 3 negative screens (as long as they have never previously tested positive for a CPO).

If the initial screening sample is negative:
- two further consecutive samples are required (3 negative screens in total)
- take 48 hours apart (i.e. samples will be taken at day 0, day 2 then day 4)

Whilst screening process is underway, manage the patient as a potentially positive CPO case with SICPs and TBPs as outlined below.

3.2 Screening for known or previously positive CPO cases

Screening for patients who are or who have previously been positive for a CPO must be discussed on a case by case basis with the Consultant Microbiologist/IPCT.
4.0 STANDARD INFECTION CONTROL PRECAUTIONS (SICPs)

Standard Infection Control Precautions (SICPs), Section 1 of the Health Protection Scotland (HPS) National Infection Prevention and Control Manual, must be used by all staff, in all care settings, at all times, for all patients whether infection is known to be present or not to ensure the safety of those being cared for, as well as staff and visitors in the care environment.

SICPs are the fundamental IPC measures necessary to reduce the risk of transmission of infectious agents from both recognised and unrecognised sources of infection.

Potential sources of infection include blood and other body fluids secretions or excretions (excluding sweat), non-intact skin or mucous membranes and any equipment or items in the care environment that could have become contaminated.

4.2 TRANSMISSION BASE PRECAUTIONS (TBPs)

TBPs are implemented in addition to SICPs to provide further protection when CPOs is known or suspected. TBPs are categorised by the route of transmission of the infectious agents (some infectious agents can be transmitted by more than one route). CPOs are cross transmitted via contact and droplets; therefore the following TBPs are required:

- **Contact precautions**
  Used to prevent and control infections that spread via direct contact with the patient or indirectly from the patient’s immediate care environment (including care equipment). This is the most common route of cross-infection transmission.

- **Droplet precautions**
  Used to prevent and control infections spread over short distances (at least 3 feet (1 metre)) via droplets (>5μm) from the respiratory tract of one individual directly onto a mucosal surface or conjunctivae of another individual. Droplets penetrate the respiratory system to above the alveolar level.

<table>
<thead>
<tr>
<th>Patient Placement</th>
<th>Patients <strong>MUST</strong> be isolated in a single room (refer to Isolation Prioritisation Score) with ensuite facilities (or a designated commode) and:</th>
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<tbody>
<tr>
<td></td>
<td>- The door should remain closed. If this is not possible, a risk assessment <strong>must</strong> be included in the nursing notes e.g. patient at risk of falls</td>
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<td></td>
<td>- An isolation notice must be placed on the outside of the door</td>
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<td></td>
<td><strong>Following CRA</strong>, patients with 3 negative CPO screens can be removed from isolation (as long as not previously CPO positive)</td>
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<td></td>
<td>Patients colonised/infected <strong>must be isolated until discharge</strong> with all appropriate precautions in place</td>
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<tr>
<td></td>
<td><strong>Patients who are or have previously tested positive must be isolated on all future admissions, until otherwise instructed by the Consultant Microbiologist/IPCT</strong></td>
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### Personal Protective Equipment
- Plastic aprons and disposable gloves must be worn for routine care with the patient or the patient’s immediate environment.
- If close contact is required and there are areas of uniform unprotected by a plastic apron, then a full length disposable gown should be worn (e.g. for physiotherapy).

**Clinical suspicion of respiratory infection**
- Plastic aprons, disposable gloves and a full face visor must be worn
- OR
- Plastic aprons, disposable gloves, surgical face mask and eye protection. Corrective spectacles are not classed as eye protection.

### Hand Hygiene
Hands must be decontaminated as per your 5 moments for Hand Hygiene:
1. Before touching a patient
2. Before clean/aseptic procedure
3. After body fluid exposure risk
4. After touching a patient
5. After touching patient surroundings

- The patient should be advised (and relatives if appropriate) about the importance of hand hygiene (especially after using the toilet)
- Alcohol Based Hand Rub (ABHR) can be used by the patient/relatives to decontaminate hands routinely, except after using the toilet.

### Patient Care Equipment
- Where available, use single use/single patient use equipment. All single use/single patient use equipment must be discarded as clinical waste
- Equipment should be kept to a minimum
- All shared or reusable equipment must be decontaminated between patients using a chlorine releasing agent e.g. Actichlor Plus™ 1 tablet in 1 litre of water (concentration = 1,000 PPM). Please refer to manufacturers’ instructions for compatibility of product
- Communal facilities such as baths, bidets and showers should be cleaned and/or decontaminated between all patients
| Environmental cleaning by Hotel Services | • Enhanced routine cleaning of the patient’s accommodation with a chlorine releasing agent e.g. Actichlor Plus™ 1 tablet in 1 litre of water (concentration = 1,000 PPM), should be undertaken by hotel service staff until instructed otherwise (see Actichlor Plus™ General Environment Poster). It is the responsibility of nursing staff to ensure that domestic assistants are aware of this requirement
  • Following the removal of the patient, the room should have a terminal clean carried out prior to the next patient being admitted |
| Clinical Waste | All waste must be discarded as clinical waste. |
| Linen | • All linen should be discarded as infected i.e. placed in a water soluble bag then into a clear plastic bag and lastly into a red laundry bag
  • Labels should be attached to each red linen bag on sealing, clearly stating:
    - Hospital of origin
    - Ward or Department |
| Safe management of blood and body fluid spillages | Spillages must be decontaminated immediately with a chlorine releasing agent e.g. Actichlor Plus™ using the following dilutions:
  • Blood spillages (or bodily fluid with associated blood); 10 Actichlor tablets in 1 litre of water (concentration = 10,000 parts per million (PPM))
  • Body fluid spillages (with no associated blood); 1 Actichlor tablet in 1 litre of water (concentration = 1,000 PPM). **Remove spillage with disposable paper roll prior to applying a chlorine releasing agent to reduce the risk of chemical reaction** |
| Occupational exposure | • Occupational exposure to CPOs can be prevented by adhering to precautions outlined above
  • Contact the Occupational Health Department if you have any concerns regarding exposure to CPOs |
| Respiratory Hygiene and Cough Etiquette | • The patient should be educated to cover mouth/nose when coughing/sneezing |
## 5.0 OTHER RELEVANT INFORMATION

| Transferring Patients | • Do not transfer patients unless essential to their management (ITU/CCU/renal etc.). This can be discussed with a Consultant Microbiologist/IPCT on a case by case basis.  
| | • Prior to transfer, you must ensure the ward receiving the patient has suitable accommodation  
| | • Prior to transfer, staff must inform any receiving ward/department that the patient has a suspected/confirmed CPO, as well as a history of specimens taken and Infection Prevention and Control precautions to be implemented  
| | • If the patient requires tests outwith their room, where possible such tests must be carried out at the end of the list and a terminal clean of the area completed immediately thereafter. The patient should be transferred directly to the treatment area and returned to isolation immediately after procedure avoiding waiting in communal areas  
| Specimens | Send specimens as clinically indicated (also refer to the Laboratory Handbook)  
| | • Rectal swabs (black charcoal) are 1st choice specimens for CPO testing along with wound swabs (black charcoal) and a CSU (if applicable) as outlined in “admission screening and results section”  
| | • When CPO screens have been obtained, contact Microbiology on 27420 and forewarn of pending samples  
| | • Diarrhoea (Bristol stool 5, 6 or 7) for any reason increases the risk of spread of bacteria from the gut. Obtain a faecal sample and send to Microbiology for CDI and OC&S. Ensure clinical details include CPO confirmed/suspected. Bristol stool charts should be implemented to record the patients’ bowel habits  
| Care After Death | A body bag is not required.  
| Patient Clothing | Laundry going home, must be placed into a clear bag and then into a patient clothing bag. The Washing Clothes at Home Information Leaflet must be issued.  
| Visitors | • Generally no visitor restrictions – However, visitors with underlying medical conditions affecting their immune system should avoid visiting  
| Documentation | • Ensure the patient is fully aware of their infectious status and has been provided with written information. Also ensure that the provision of this information has been documented in the patients nursing and medical notes  
<p>| | • For confirmed CPO cases, The CPO checklist must be completed daily by the nurse in charge of the patients care |</p>
<table>
<thead>
<tr>
<th>Action to be taken</th>
<th>Patient confidentiality must be maintained at all times. Information concerning any infection must only be given to others on a need to know basis.</th>
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</table>
| Additional information | • Invasive devices must be assessed for ongoing need (urinary catheter, PVC, CVCs etc.) and removed when not required  
• Antimicrobials **must not be prescribed** for a patient positive or previously positive for a CPO without discussing with a Consultant Microbiologist  
• Transport of bodily fluid from their single room to the sluice room must be minimised. Where possible dispose of waste into en-suite toilet and place shells in clinical waste stream. If no en-suite facilities, use solidifying gels prior to transfer to sluice area  
• Screening of patient contacts of a positive case will be assessed on a case by case basis by the IPCT (It is not necessary to isolate contacts while awaiting screening results)  
• For a confirmed CPO case, the IPCT will liaise closely with the area concerned regarding future management and education of staff |

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