Ashford and St. Peter's Hospitals
NHS Foundation Trust

Carbapenemase-Producing Enterobacterales (CPE) / Carbapenem Resistant Organisms (CRO)

Screening and Infection Prevention and Control Management Policy

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History

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1	May 2016	New policy	Prodine Kubalalika
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3	September 2021	Complete review and new policy format, including a more extensive section on infection prevention and control	Shila Patel

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Executive summary

This policy sets the Trust standards for infection prevention and control when assessing and caring for patients with carbapenemase-producing Enterobacterales (CPE) / Carbapenem Resistant Organisms (CRO).

Enterobacterales are a large family of bacteria that live harmlessly in the gut of humans and animals. They include species such as Escherichia coli, Klebsiella species and Enterobacter species and often cause a variety of infections, including urinary tract infections, intra-abdominal and bloodstream infections.

Carbapenems are a valuable family of penicillin-like antibiotics normally reserved for treating serious life-threatening infections in hospital, caused by multidrug resistant Gram-negative bacteria. They include meropenem, ertapenem, imipenem and doripenem.

Some enterobacterales are resistant to antibiotic treatment by producing enzymes called carbapenemases, which destroy carbapenem antibiotics. Enterobacterales that produce carbapenemases are referred to as CPE/CRO. (KPC, OXA-48-like, NDM, VIM, and IMP enzymes are the most prevalent enzymes in the UK.)

These resistant bacteria can spread rapidly in healthcare settings and serious infections caused by CPE/CRO can affect patient morbidity and mortality.

It is therefore very important to identify patients with CPE/CRO as early as possible and use the correct infection prevention and control precautions, including early isolation, to minimise the risk of cross-infection.

This policy details how to assess and screen patients for CPE/CRO, as well as the required infection prevention and control precautions.

The standards detailed in the policy are applicable to all staff who work in wards or other clinical departments, including support staff who assist with patient care in any way.

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Appendices

See also: Standard Infection Prevention and Control Precautions Policy

1. Introduction

1.1 This policy sets out the infection prevention and control standards for **carbapenemase-producing Enterobacterales (CPE) / carbapenem resistant organisms (CRO)**

1.2 What are carbapenemase-producing Enterobacterales / carbapenem resistant organisms?

Enterobacterales are a large family of bacteria that live harmlessly in the gut of humans and animals. They include species such as *Escherichia coli*, *Klebsiella* species. and *Enterobacter* species. These organisms are also some of the most common causes of infections, including urinary tract infections, intra-abdominal and bloodstream infections.

Carbapenems are a valuable family of β-lactam (penicillin-like) antibiotics normally reserved to treat serious life-threatening multidrug-resistant Gram-negative infections in hospitals. They include meropenem, ertapenem, imipenem and doripenem.

Resistance to some or all carbapenems is an intrinsic (natural) characteristic of some Gram-negative bacteria. Others can confer resistance, for example by producing carbapenemases, which are enzymes that destroy carbapenem antibiotics. This policy focuses on **acquired carbapenemases**, which are a particular concern as these genes (usually located on mobile elements such as plasmids) can move vertically (within a strain) and horizontally (between strains, across species and genera).

Enterobacterales producing acquired carbapenemases are referred to as CPE. The most prevalent enzymes in the UK are KPC, OXA-48-like, NDM, VIM, and IMP. Increasing gut colonisation with these resistant bacteria will inevitably lead to an increase in difficult-to-treat infections.

These resistant bacteria can spread rapidly in healthcare settings and invasive infections caused by CPE/CRO increase patient length of stay and can impact morbidity, and mortality, compared to bacteria not carrying resistance markers.

Therefore, it is very important to identify patients with CPE/CRO as early as possible and use the correct infection prevention and control precautions, including early isolation, to minimise the risk of cross-infection.

1.3 How are carbapenemase-producing Enterobacterales spread?

Individuals who have these bacteria living in their gut can contaminate their hands when they go to the toilet. Contaminated hands can then spread the bacteria into the environment and onto surfaces, such as equipment (e.g., commodes) and potentially spread to other patients, particularly if standards of hand hygiene and environmental cleanliness are poor or if breaches occur.

2. Scope

2.1 This policy applies to all Trust staff working in patient wards and departments, including Trust employees, temporary staff (agency, bank, locums, students and contractors) as well as visitors and carers.

3. Purpose

3.1 The purpose of this policy is to set the Trust standards for infection prevention and control for the care and management of patients with suspected or confirmed CPE, to prevent the risk of further transmission.

4. Explanation of Terms Used

Carbapenemases	Enzymes (such as KPC, OXA-48-like, NDM and VIM) produced by some bacteria which cause destruction of the carbapenem antibiotics, resulting in resistance.
Carbapenems	A group of powerful antibiotics used to treat severe infections. They include meropenem, ertapenem, doripenem and imipenem.
Contact	A person living in the same house; sharing the same sleeping space (room or hospital bay); or a sexual partner.
Colonisation	The presence of micro-organisms (such as bacteria) living harmlessly on the skin or within the bowel and causing no signs or symptoms of infection.
Enterobacterales	A group of bacteria that usually live harmlessly in the gut of humans (and animals). They include Escherichia coli (E. coli), Klebsiella species, Enterobacter species.
Frequent-touch surfaces	Surfaces that are touched many times throughout the day by various people. Frequent-touch surfaces include but are not limited to: bed rails; bed frames; moveable lamps; overbed table; bedside table; handles; IV stands.
High-risk for colonisation and/or infection with CPE	• patients with a history of an overnight stay in hospital within the last 12 months, including abroad • patients who were previously identified as CPE positive • patients who have multiple hospital admissions or treatments e.g.: are dialysis dependent or have had cancer chemotherapy in last 12 months • epidemiological link to a known carrier of CPE • patients who are admitted into augmented care/high risk units • patients with recent exposure to broad-spectrum antibiotic courses, (especially carbapenems), within their last or current hospital stay
Infection	The presence of micro-organisms (such as bacteria) in the body causing adverse signs or symptoms.

5. Duties and responsibilities

5.1 Chief Executive

- Has overall responsibility for infection prevention and control across the Trust. This includes implementation of this policy
- Has responsibility for ensuring that appropriate actions are taken to protect patients, staff and others who may be at risk of acquiring healthcare-associated infections (including those caused by CPE/CRO)
- Has responsibility for ensuring adequate resources are available for infection prevention and control
- Is legally responsible for identifying, assessing, and controlling the risk of infection in the workplace but may delegate operational responsibilities.

5.2 Chief Nurse / Deputy Chief Nurse

- Has responsibility for the implementation of this policy within Nursing and Midwifery
- Has responsibility for ensuring high standards of patient care are maintained, including adherence to infection prevention and control, as detailed within this policy
- Has responsibility for ensuring wards / departments are adequately nurse staffed, to implement infection prevention and control to a high standard.

5.3 Director for Infection Prevention and Control (DIPC)

- Is accountable for the implementation of the Health and Social Care Act (2008), which includes overseeing implementation of Trust infection prevention and control policies and guidelines, including this policy
- The DIPC reports directly to the Board about matters relating to infection prevention and control, including care and management of patients with CPE.

5.4 Divisional Lead Nurses / Divisional Directors

- Has responsibility for ensuring adequate dissemination and implementation of this policy within each Division
- Has responsibility for ensuring all staff are aware of their respective roles and responsibilities in relation to infection control, including this policy
- Are accountable for ensuring that appropriate/agreed actions are carried out where areas of concern or deficiencies are identified, so concerns/deficiencies are resolved.

5.5 Matrons / Ward Managers / Department Managers

- Are responsible for implementing and checking compliance with this policy in their wards / departments and challenging poor compliance / practice as necessary
- Are responsible for supporting staff in following this policy by releasing staff to attend infection prevention and control training
- Ensuring optimal usage of single rooms to contain spread of CPE and where sufficient single rooms are not available, escalating this to the Site Management Team as early as possible

5.6 **Control of Infection Committee (COIC)**

- Has responsibility for monitoring and reviewing all issues relevant to infection prevention and control within the Trust, including hand hygiene compliance, training attendance and adherence to infection prevention and control policies, including this policy.

5.7 **Associate Director of Infection Prevention and Control / Nurse Consultant Infection Prevention and Control / Infection Prevention and Control Team**

- Are responsible for setting the Trust standards for infection prevention and control for the care and management of patients with CPE, in line with national guidance, current best practice and any changes in legislation
- Are responsible for ongoing surveillance of healthcare associated infections, including CPE, to identify and control clusters / outbreaks, in line with national guidance and in collaboration with the DIPC and Outbreak Control Group
- Are responsible for monitoring patients with CPE to ensure the correct infection prevention and control precautions are in place, including early single room isolation and support staff, challenging non-compliance with this policy / poor practice as necessary
- Provide specialist advice on / reinforce appropriate infection prevention and control precautions when a patient is identified as having a CPE
- Provide training so staff can safely care for patients with CPE.

5.8 **Clinical Site Team**

- Are responsible for ensuring that this policy is adhered to in relation to admissions/transfers/ repatriations from other hospitals (UK or abroad) in relation to CPE risk assessment and when identified, ensure patients are managed appropriately in single room isolation (preferably with en-suite facilities)
- Ensure optimal usage of single rooms to contain spread of CPE
- Reinforce appropriate actions following positive CPE results.

5.9 **Laboratories**

- Laboratories have a responsibility to process swabs in an accurate and timely manner and to provide quality results that provide information for delivery of appropriate patient care.

5.10 **Pre-Assessment Department**

- Have responsibility for ensuring the CPE risk assessment is completed and documented for patients undergoing elective procedures
- Are responsible for ensuring appropriate samples are taken
- Are responsible for informing the patient, GP and relevant surgeon about any CPE positive results
- Are responsible for informing the admitting ward / department about CPE positive results and the need for single room isolation on admission to discharge (unless otherwise advised by the IPC Team).

5.11 **Housekeeping Manager / Team**

- Ensuring thorough environmental cleaning is in place within single rooms used to source isolate patients with CPE
- Ensuring adequate resources (staff and cleaning equipment) are available to facilitate thorough cleaning of the environment.

5.12 **All Staff Working in Wards / Departments**

- Are responsible for adhering to the standards detailed within this policy
- Where the standards cannot be implemented for a good reason, staff are responsible for escalating this to the manager in charge
- The qualified nurse / doctor caring for the patient is responsible for discussing the results with the patient and others on a need-to-know basis.

6. The Policy

6.1 **Early Recognition of Patients who may be colonised/infected with CPE / CRO**

Early recognition of patients who may have a CPE/CRO colonisation or infection is important, to prevent onward transmission. Colonisation and infection are defined as:

- **Colonisation** – the presence of microorganisms in tissues without the evidence of tissue damage, i.e. the microorganisms are present harmlessly
- **Infection** – the presence of micro-organisms in tissues causing active disease, with an associated host immune response e.g. redness, swelling, pain and pyrexia

There are no specific signs or symptoms of CPE/CRO colonisation, as the organisms are present harmlessly.

Signs and symptoms of a CPE/CRO infection are dependent upon the type of infection caused, e.g. a wound infection caused by CPE/CRO will present with the typical signs and symptoms of wound infection, such as wound inflammation, local tenderness/pain, exudate, delayed wound healing and a raised temperature.

6.2 **Mode of Transmission**

- The organisms are generally spread directly from person-to-person via contaminated hands
- Indirect transmission via contact with contaminated equipment or contaminated environmental surfaces.

6.3 **Risk assessment for early identification of Patients who may be colonised / infected with CPE/CRO (see appendix 2)**

Screen ALL in-patients on admission and Electives at Pre-assessment
The following patients should be screened on admission if they are **likely to stay in hospital overnight and if in the last 12 months** they have:

- been previously identified as CPE positive
- been an inpatient in any hospital, in the UK or abroad (this excludes being an inpatient in any of Ashford and St Peter's own hospitals)
- had multiple hospital treatments/frequent healthcare contact e.g. are dialysis dependent
- had an epidemiological link to a known carrier of CPE, i.e. are a CPE contact
- they are admitted into augmented care or high-risk units, e.g. critical care (adult, paediatric or neonatal).

If the answer is **YES** to **ANY** of these questions, as well as collecting a CPE/CRO screen, the patient should be isolated in a single room with en-suite facilities.

Standard infection prevention and control precautions and contact precautions must be used when caring for the patient.

If the answer is **NO** to **ALL** of these questions, screening and isolation are not required.

Non in-patient settings, e.g. Outpatient Departments
For patients attending non-in-patient services, e.g. Outpatients Department, CPE/CRO screening is not required. Standard infection prevention and control precautions should be used for all patients, at all times.

6.4 **Screening for CPE / CRO**
Rectal specimens are most sensitive for detecting the carriage of antibiotic resistant-Enterobacterales.

If a screening sample is required, the following optimise the ability of the laboratory to detect the presence of CPE / CRO:

- A rectal swab, taken by gently inserting the swab 3-4cms inside the rectum beyond the anal sphincter, rotating *gently* and removing
- Normal saline can be used to moisten the swab prior to insertion
- The swab should have visible faecal material and/or discolouration is visible on the swab to enable organism detection in the laboratory
- A stool specimen may be sent if a rectal swab is not feasible or acceptable

AND

- A wound swab (if the patient has a wound) and/or a urine sample (if catheterised).

For patients who require screening for CPE/CRO, collect ONE rectal screening swab (three screens are no longer required, in line with the updated national guidance).

For patients who have been previously CPE/CRO positive, treat as being persistently colonised regardless of screening results (though the evidence base for this is limited and is likely to change as knowledge evolves).

6.5 **Informing the patient**
Prior to collecting a rectal swab / stool sample, inform the patient about why a sample is being collected.

If the screening swab / stool sample is positive for CPE/CRO it is the responsibility of the doctor/nurse caring for the patient to inform the patient about the result and to explain what it means for the patient.

If the result is positive and becomes available after the patient has been discharged, the patient's GP must be informed, and a CPE/CRO card provided.

The IPC Team will send a letter informing the GP about the result, along with a CPE/CRO card for the patient.

6.6 **Decolonisation / Treatment**

Decolonisation is not advised for CPE/CRO for the following reasons:

- Skin decolonisation – these bacteria naturally live / colonise the gut rather than the skin; therefore, skin decolonisation would not be effective
- Gut decolonisation (prescribing antibiotics) is not routinely recommended as there is concern that their use would contribute to increasing antibiotic resistant micro-organisms.

6.7 **Treatment**

Antibiotic treatment is only indicated when clinical infection is present. In this situation, seek further advice about the most appropriate treatment for individual patients from our Microbiology Consultants.

6.8 **Antimicrobial Stewardship**

Antimicrobial stewardship is vitally important to minimise inappropriate use of broad-spectrum antibiotics, including carbapenems, which if used indiscriminately may lead to further carbapenem resistance. Therefore, all antimicrobial prescribing must be in accordance with the Trust standards for antimicrobial prescribing described in the Antimicrobial Prescribing Policy, available on the Trust intranet. This also details the restricted antimicrobial policy, which reserves certain antibiotics for difficult to treat infections and how to access these.

6.9 **CPE/CRO contacts**

A CPE/CRO contact is defined as a patient who has been in direct contact (for example person-to-person contact) or indirect contact (for example contact with contaminated environment or equipment) with another patient who is affected by CPE/CRO (infected or colonised) and is therefore at risk of CPE/CRO carriage and should be screened.

CPE/CRO contacts are most commonly defined as having shared the same clinical space (e.g. multi-bed bay) as a known CPE/CRO carrier.

To minimise the risk of CPE/CRO contacts, it is important to risk assess all patients on admission to hospital and to isolate patients as soon as possible those patients who are most likely to be colonised (i.e. those patients who answer ‘yes’ to the screening questions in 6.3).

7.0 Infection Prevention and Control to minimise the risk of transmission – Use standard IPC precautions and contact precautions

-Refer to appendix 1: flow chart for infection prevention and control precautions to contain CPE/CRO

7.1 Source isolation

- Isolate all inpatients screened for or known to be CPE/CRO positive in a single room with en-suite facilities, wherever possible
- In the paediatric setting, where a baby/child is colonised/infected with CPE/CRO it is likely the parent(s) are also colonised and therefore parents staying with the baby/child should also be isolated in the single room and should use the en-suite facilities (or a dedicated toilet if en-suite is unavailable)
- If the single room does not have en-suite facilities, a commode should be assigned to the patient. Label the commode with the patient's first and last name, to ensure it is used for that patient alone. Alternatively, a dedicated toilet may be provided if one is available immediately outside the single room
- For bedbound patients using a bedpan, the bedpan holder must be dedicated and labelled with the patient's first and last name. Following each use, thoroughly decontaminate the holder using Chlorox wipes
- If a single room is not available liaise with the Infection Prevention and Control Team for further advice, who will risk assess the situation, taking account of:
  - patient characteristics, particularly those presenting an increased risk of transmission, such as patients who have diarrhoea, or are incontinent, have wounds with uncontrolled drainage, or are colonised in their respiratory tract and who are coughing
  - patient's level of self-care and type of stay (pre-operative / day case / admission / intensive care)
  - screening results ('high-risk' patients or confirmed positive)
- The IPC Team may advise cohorting patients together into one area of a ward, e.g. a multi-bed bay, if the patients all have the same CPE/CRO organism and the same carbapenemase enzyme
- Where patient isolation or cohorting is not feasible (due to individual patient risk factors or clinical bed pressures), management of CPE/CRO positive patients may sometimes require the application of Standard Infection Control Precautions and Contact (transmission based) Precautions in a multi-occupancy bay.
  NOTE: This carries a risk of cross-infection to other patients in the multi-bed bay and should only be used as a last resort. In this situation is it essential the precautions are used rigorously for the duration of the inpatient stay.

7.2 Hand hygiene

- Scrupulous hand hygiene is vital, as CPE/CRO can be transmitted via contaminated hands
- Wash hands with liquid soap and running water after handling blood and body fluids, contact with patients who have diarrhoea or if hands are visibly soiled
- Use alcohol hand sanitizer before and after each patient contact when hands are not visibly soiled
- It is vital that patients are reminded /assisted with hand hygiene after using the toilet and before eating
- Staff are to follow the WHO 'five moments for hand hygiene' (refer to the Trust Standard IPC Precautions policy for further information)

- Ensure clinical hand wash basins are only used for the purposes of hand washing and nothing else. Do NOT dispose of any of the following down a clinical hand wash basin (as they provide nutrients and increase bacterial numbers present in biofilms in basins):
    - body fluids
    - tea, coffee or other nutrient containing beverages
    - disposal of IV fluids
    - washing any patient equipment
    - storage of used equipment awaiting decontamination
    - used wash water after washing a patient

7.3 Personal Protective Equipment (PPE)

- Risk assess the task to be carried out and wear disposable gloves and plastic apron if:
    - contact with blood / body fluids, wounds, invasive devices, or mucous membranes is anticipated
    - providing direct personal care
    - contact with contaminated equipment/environment is anticipated
- For tasks / activities where a plastic apron does not provide adequate protection, e.g. turning a patient or where there is a risk of extensive splashing of blood/body fluids, e.g. excessive wound exudate, diarrhoea or faecal incontinence, wear a disposable long sleeved gown.
  NOTE: long-sleeved gowns are NOT required for all tasks/activities
- Masks / eye protection are not routinely required for attending patients with CPE, but should be worn for tasks/activities where splashing with blood/body fluids to the face is anticipated
- All gloves and aprons/gowns are single-use and must be changed between different tasks on the same patient and between patients
- Dispose of all used PPE as clinical infectious waste into an orange bag after use

7.4 Waste Management

All waste from patients with suspected/confirmed CPE/CRO may be infectious and should be disposed of as clinical waste into orange waste bags.

7.5 Linen Management

All linen from patients with suspected/confirmed CPE/CRO should be laundered as contaminated/infectious laundry.

Place used linen into a red soluble bag and then into an outer white plastic transport bag.

7.6 Environmental Cleanliness, including terminal cleaning

- The environment surrounding CPE/CRO patients may become significantly contaminated, therefore, it is important to ensure high standards of environmental cleanliness are maintained to reduce the risk of transmission between patients
- Thoroughly clean all hard surfaces daily, using a combined detergent and suitable disinfectant e.g. Tristel, focusing on frequent touch sites
- Where a patient with CPE/CRO experiences diarrhoea, increase the frequency of environmental cleaning from once a day to twice daily (as a minimum), concentrating on the toilet and surrounding area (if used), or the bed area if commode/bedpan is used

- On patient transfer, discharge, or death, terminally clean the single room / cohort area:
    - Change the privacy curtains around the bed (launder fabric curtains, or replace single patient use curtains)
    - Clean and disinfect mattress covers and pillows using Clinell Universal Wipes (or Chlorox wipes if the patient was experiencing diarrhoea in the bed). Check the integrity of the mattress / pillow covers and if damaged/torn, discard and replace
    - Disassemble and clean pressure relieving mattresses using Clinell Universal Wipes, then place inside a mattress bag and send for disinfection via the external mattress cleaning contractor
    - Replace the lavatory brush and its holder
    - Discard all used or unused single-use items or consumables in the patient's immediate vicinity (that may have become contaminated by hand contact) – keeping limited stocks near the patient reduces the need for this, reducing wastage
    - Tubes of ointment and lubricant should be discarded
    - Undertake high level environmental disinfection, e.g. ultraviolet light or hydrogen peroxide vapour disinfection, according to availability within the Trust, prior to reusing the room / cohort area for another patient(s).

7.7 Patient Equipment

- Use dedicated single-patient use equipment where possible, e.g. blood pressure cuff, slide sheets, pulse oximeter, commode, ensuring all single-patient use equipment is labelled with the patient's first and last names to prevent inadvertent reuse on other patients
- Do not take unnecessary equipment / consumables into the isolation room, to limit the potential for cross-contamination via the equipment.
- Any unused single use equipment stored in the patient's room or en-suite must be discarded following patient discharge
- For multi-patient use equipment, e.g. patient hoist, thoroughly clean using detergent/disinfectant impregnated wipes, e.g. Clinell Universal Wipes, before reuse on other patients. For specialist equipment, refer to manufacturer's instructions
- All flexible endoscopes need be decontaminated in compliance with 'Management and decontamination of flexible endoscopes (HTM 01-06)', including those used on patients colonised / infected with CPE, as transmission of multi-resistant Gram-negative bacteria, including CPE, has been observed via endoscopes.

7.8 Patient Medication

- Patient's own medication brought in from home should be stored in the source isolation room, inside the lockable wall mounted medication box
- Patient's medication provided by the Trust, should be stored in the lockage wall mounted medication box outside the single room (if available there) or in the medicine trolley, and dispensed as and when needed. It is preferable not to store this medication in the source isolation room, as this would result in it becoming contaminated and hence any unused medication would require disposal on patient discharge/transfer/death, resulting in wastage of medication.

7.9 **Food Management**

- Food brought in from home is a potential source of cross contamination of shared fridges
- Food brought in from home for a suspected/known CPE/CRO positive patient by their family should be in wipe-able containers and need to be wiped clean prior to storage in a communal fridge
- Containers or food that have come into contact with the patient's environment should not be returned to the communal fridge
- If possible, clean the underside of food trays, prior to leaving the single room and place used cutlery/crockery into the dishwasher. Wipe surfaces that trays/items have been placed on
- Mothers or babies who are suspected/known CPE/CRO positive and the mother is expressing breast milk, the milk bottles should be wiped clean prior to placing into a communal fridge.

7.10 **Visitors**

- Visitors who are not providing any patient care and who are not visiting other patients in the hospital do NOT need to wear gloves or an apron/gown
- Visitors should be advised to clean their hands on entering the ward and prior to leaving the isolation room / cohort area
- If visitors are taking an active part in the patient's care, e.g. helping with personal hygiene needs, standard infection control precautions should be advised/used
- Visitors should not use patient toilet facilities

7.11 **Discharge Home or Transfer to other healthcare facility, including care homes**

- Colonisation or infection with CPE/CRO should not restrict a patient's discharge home or transfer to another hospital or care home. The decision to discharge / transfer is dependent on the patient being medically fit for discharge / transfer
- The receiving healthcare facility must be informed (on hand over and Trust transfer / discharge summary documentation) of CPE/CRO screening and the screening results. The patient's GP must also be informed about the CPE/CRO diagnosis via the Trust discharge process/documentation. If the patient is negative, this result should also be provided, before transfer occurs.

7.12 **Specific CPE/CRO management in Paediatrics / Maternity**

Where a baby/child or mother is found to be CPE/CRO positive, both the baby/child and resident mother should both be cared for in a single room with an en-suite. The en-suite is for use by the mother, **and** their visitors to use. if an en-suite is not available provide a dedicated toilet.

The family can use other communal areas of the ward with advice on maintaining hand hygiene after handling nappies and care of the baby.

In addition to following the standard infection prevention and control precautions detailed above, also apply the following precautions:

7.12.1 **Used nappies**

- Discard into the clinical waste bin inside the room where possible
- If this is not possible, they should be taken out in a nappy sack/container, by a member of staff (not the parent/ carer) to the sluice room and weighed as required, then disposed of

- Clean the scales, plus any surfaces that the nappy, or staff member has been in direct contact with, using Chlorox wipes.

7.12.2 **Breast pumps**

- It is preferable for a mother to use her own pump. This can stay in the room with the mother; however, the expressing kit will need to be decontaminated
- This should be carried out by a member of staff
- If the mother does not have her own pump, a dedicated breast pump labelled with the mother's first and last name needs to be used.

7.12.3 **Management of expressed breast milk**

- Bottles containing expressed breast milk should be cleaned by a member of staff prior to storage in a communal fridge.

7.12.4 **Toys and play**

- Toys should be dedicated for the child with CPE/CRO for the duration of their stay. Those that are not cleanable should either go home with the child or be discarded.

7.12.5 **Local laundering of items**

- Local laundering of clothing, blankets or any other items must not take place in the washing machine on NICU for any babies colonised/infected with CPE/CRO.

7.12.6 **School age children having teaching:**

- This should occur in the child's room
- Items that cannot be easily cleaned should not be used and should not be brought into the room
- Education staff need to assess the level of contact with the child / their environment and where extensive direct contact is anticipated, disposable gloves/apron to be worn
- Regardless of whether PPE is worn, thorough hand hygiene needs to be undertaken before entering and exiting the child's single room
- Laptops etc can be wiped clean by the Education team after use, using Clinell Universal Wipes
- Sibling visitors are not to use the playroom or school areas or communal play areas in the Trust.

7.13 **Attending other departments e.g. Theatres / Radiology**

- Patients with suspected / confirmed CPE/CRO who require diagnostic tests/ procedures should have these carried out in the patient's single room where possible
- Where investigations / procedures cannot be undertaken in the patient's room, the patient can attend other departments using appropriate precautions
- The patient should be scheduled at end of the procedure list (wherever possible) to allow for thorough cleaning and decontamination of the environment, excess equipment should be removed from the room as far as practically possible, and the patient should be seen promptly to minimise the length of time spent in communal waiting areas
- Porters are not required to wear PPE when transporting patients between departments, unless contact with blood / body fluids is anticipated

- It is the responsibility of the transferring ward/departmental staff to inform the receiving department
- If the patient is undergoing surgery, they may require different / additional antimicrobial prophylaxis to non-carriers. Further advice can be sought the Consultant Microbiologist
- After surgery, the patient should be recovered in theatre
- Once the patient exits the theatre there is no requirement for high level environmental disinfection with ultraviolet light, as the theatre ventilation (air changes) and cleaning of surfaces/equipment in-between each case is sufficient
- After the patient has exited the investigation/procedure/operating room, clean all surfaces the patient has had direct or indirect contact with, e.g. procedure couch/table and equipment trolleys. Clean using detergent and disinfectant impregnated wipes/solution, e.g. Clinell Universal Wipes or Tristel solution, before the room is used for another patient.

7.14 **Last Offices**

- In the event of death observe the same infection control precautions taken while the patient was alive
- Body bags are not routinely required (unless there is uncontrolled leakage of body fluids from orifices).

8.0 Managing CPE/CRO outbreaks and clusters

CPE outbreaks may arise from patients whose colonisation status are not recognised or swiftly contained.

While some CPE/CRO incidents are due to just one organism strain (clonal), others may not be organism specific and multiple different organisms may be found, all harbouring the same resistance mechanism and therefore still be linked. Microbiological expertise will be required to consider if plasmids carrying resistance mechanisms have transmitted between genera e.g. from E. coli to Klebsiella species.

8.1 **Definitions**

Clusters may be defined as two or more cases that appear to be linked in time and space, thus warranting further investigation, e.g. establishing if the organisms have the same resistance mechanism.

Outbreaks may be defined as two or more cases that have been confirmed to have the same resistance mechanism and are linked in time and space.

8.2 **IPC precautions for managing clusters / outbreaks**

If a CPE cluster or outbreak is suspected/confirmed, the IPC Team, including the Consultant Microbiologist, will advise on further actions required, including:

- Developing definitions for cases and contacts
- Reviewing outbreak data to determine epidemiological links and potential sources
- Identifying contacts and screening of these patients, including the frequency of screening, e.g. the patients in the affected bay/ward should be screened twice a week for two weeks, and weekly for a further two weeks. Once no new cases are detected the frequency of screening may be reduced and

subsequently stopped. While there is no evidence to suggest how long this should be, experience with other resistant bacteria would suggest a pragmatic period of between 4 and 8 weeks
- Screening of contacts who have already been discharged from an outbreak ward to their usual home setting is not generally recommended, however, an alert should be added to their records so they can be screened if they are readmitted to hospital in the following 12 months
- Optimising staff-patient ratios to allow good adherence to IPC precautions
- Minimising staff movement between affected and unaffected areas
- Observing IPC practice, and advising on how practice can be improved if deficiencies are identified
- IPC audit implementation
- Use of enhanced cleaning/disinfection, including increased frequency
- Single room isolation or cohorting of cases (cohorting should not be undertaken where patients have different carbapenemases or different organisms)
- Ensuring single use patient equipment is being used and ensuring appropriate disinfection is carried out for multi-patient use equipment
- Considering environmental risk factors, shared equipment and reservoirs e.g. sink drains, and the inappropriate use of hand wash basins
- Considering whether prescribing formulary changes are required to minimise patient/environmental exposure to broad spectrum antibiotics, in particular carbapenems
- Agreeing incident action plan including communications to key staff and stakeholders, with regular updates
- Considering closing the affected ward to admissions to minimise potential for transmission to other patients and minimise patient transfers from the affected ward.

9.0 Training

- Specific guidance / informal training will be provided by the Infection Prevention and Control Nurses for staff caring for patients with CPE/CRO, on a specific patient-by-patient basis as and when required, as well as during mandatory infection prevention and control update training, which covers the use of standard infection prevention and control precautions.

10. Stakeholder Engagement and Communication

- This policy has been circulated to all relevant stakeholders via the Control of Infection Committee (COIC), which includes representation from all divisions and other relevant departments, such as Housekeeping and Estates. The COIC members have been asked to comment on the Policy, so relevant feedback can be incorporated into the policy standards.

11. Approval and Ratification

- This policy has been approved / ratified by the Control of Infection Committee.

12. Dissemination and Implementation

- The policy is available to all staff on the Trust intranet and disseminated via ward managers / matrons.

13. Review and Revision Arrangements

- The policy will be reviewed every 3 years, or sooner if new national guidance is issued / becomes available.

14. Monitoring compliance with this Policy

Measurable Policy Objective	Monitoring/ Audit method	Frequency of monitoring	Responsibility for performing the monitoring	Monitoring reported to which groups/ committees, inc responsibility for reviewing action plans
Check whether patients with known or suspected CPE/CRO are source isolated	Monitor during IPC ward rounds	Weekly during IPC ward rounds	Infection Prevention and Control Team	Monitoring findings are reported to the relevant ward manager, particularly where there is non-adherence, so source isolation can be implemented as soon as possible

15. Supporting References / Evidence Base

National Institute of Clinical Excellence (NICE) (2019) Prevention and control of healthcare associated infections, accessed 30/09/21 Scenario: Management Management | Healthcare-associated infections | CKS | NICE

Public Health England (2020) Framework of actions to contain carbapenemase-producing Enterobacterales

APPENDIX 1: flow chart of infection prevention and control precautions to contain CPE in the acute setting

Assessment of patients for CPE status

Patient is suspected or at risk of colonisation or infection with CPE
Take ONE rectal swab
(or stool sample if unable to collect rectal swab)
Isolate patient in a single room, with en-suite.
(If unavailable, provide dedicated & labelled commode)

No known risk
Screening not required
Send routine microbiological samples as clinically indicated

Recent laboratory confirmation i.e. during this admission episode or confirmed at the transferring healthcare facility
Treat as positive case (see below)

CPE identified in a routine clinical sample?

Negative result*

Positive result

Can be removed from isolation *(unless another reason for continuing isolation or further screening required*).*
No further action

* previously positive individuals with negative screens can revert to being CPE positive, especially after a course of antibiotics – careful risk assessment is needed prior to removing from isolation, liaise with the IPC Team about this.

Based on the Framework of Actions to Contain CPE, Public Health England (2020)

Summary of actions required
- Inform patient of result
- Ensure patient is isolated in a single room with en-suite facilities. If unavailable, provide dedicated & labelled commode. Request enhanced cleaning (x2 daily) if patient has diarrhoea
- Ensure standard infection control precautions and contact (transmission based) precautions are used, including providing single patient use equipment where possible, e.g. blood pressure cuff and dedicated equipment as required. Thoroughly decontaminate multi-use equipment prior to reuse on other patients
- Communicate to relevant clinical teams, IPC team, and clinical site team
- Flag patient notes with result
- Consider convening incident /outbreak control meeting if there is evidence of transmission within the hospital setting
- Identify and screen contacts. Seek advice from the IPC Team as required
- Review clinical management, including use of antimicrobials and devices (whether required)
- Communicate patient's positive status to GP and other health/care providers on discharge/ transfer. Terminal clean of patient's single room, including UV light disinfection.

APPENDIX 2: CPE RISK ASSESSMENT

Name: DOB: Hospital no: NHS no:	**Ward / Department:** **Date of assessment:**

Rationale: early identification of suspected/known Carbapenemase-producing Enterobacterales (CPE) and for early isolation, to minimise risk of cross-infection from one patient to another.
When - Assess each patient at pre-assessment, or on admission, readmission OR on transfer from another healthcare facility.
If the patient is a Laboratory confirmed case of CPE as either infection or colonisation - isolate the patient immediately and treat as a positive case

CPE RISK ASSESSMENT				
IN THE LAST 12 MONTHS HAS THE PATIENT: Tick YES or NO				
		YES	**NO**	**COMMENTS**
1	Been an inpatient (overnight) in a hospital overseas			
2	Been an inpatient (overnight) in another UK hospital			
3	Been informed they have been previously positive for Carbapenem Resistant Organism			
4	Been a household contact of a person who has been positive for Carbapenem resistant organism (if known)			
5	Had multiple hospital treatments, e.g. dialysis			
FOR THIS ADMISSION: Tick YES or NO				
6	Will the patient be admitted to an augmented care or high risk unit? e.g. ICU, NICU			

IMMEDIATE ACTION TO TAKE	
NO to ALL questions	• No action to take
YES to ANY of questions 1 - 5	• Screen for CPE using rectal swab or faecal sample and document in notes and on bottom of this risk assessment (also swab any other wounds/ breaks in skin for CPE, and urine specimen if admitted with urinary catheter) • Inform relevant clinicians and IPC team IF POSITIVE immediately • Arrange for patient to be placed at the end of the procedure list • On admission, admit to a single room with an en-suite • Use strict Standard Infection Prevention and Control Precautions (hand hygiene, PPE etc.)
YES to question 6 and No to questions 1 - 5	• Screen for CPE (rectal swab accompanied by wound swab if applicable and urine specimen if admitted with urinary catheter) and document in notes and on bottom of this risk assessment

	• Use strict Standard Infection Prevention and Control Precautions (hand hygiene, PPE etc.)
RESULTS AVAILABLE – ACTION TO TAKE	
Screen result (or subsequent result) is **POSITIVE**	• Admit to a single room with en-suite for duration of admission • Reinforce strict Standard Infection Prevention and Control precautions (hand hygiene, PPE etc.) • Inform patient of infection/carrier status • Inform relevant clinicians and IPC Team immediately • Document result in notes and on the bottom of this risk assessment • Provide single use equipment where possible/needed, e.g. slide sheets, hoist slings, BP cuffs On patient discharge/transfer/death, undertake a terminal clean and Ultraviolet Light Disinfection prior to next admission
Screen result is **NEGATIVE**	• Patient can be admitted to a bay with no additional precautions

Date of sample(s)	**Specimen site (circle)**	**Result (circle)**
	Rectal Swab or Stool	**POSITIVE or NEGATIVE**
	Wound swab (if applicable)	**POSITIVE or NEGATIVE**
	Urine specimen (if applicable)	**POSITIVE or NEGATIVE**

Risk Assessment completed by:	(Name)		
Outcome of Risk Assessment: **Tick as appropriate**	No screen needed	Screened & negative	Screened & positive

APPENDIX 3: EQUALITY IMPACT ASSESSMENT

Equality Impact Assessment Summary

Name and title: Shila Patel, Nurse Consultant Infection Prevention and Control

Policy: Carbapenemase-producing Enterobacterales

Background • The Equality Impact Assessment has been undertaken by Shila Patel, Nurse Consultant Infection Prevention and Control.
Methodology • The impact of this policy has been assessed for all patients being admitted, readmitted or transferred into the Trust.
Key Findings • This policy is applied equally to all patients admitted, readmitted or transferred into the Trust and does not adversely impact patients based on their race, ethnic origin, disability, gender, culture, religion or belief, sexual orientation or age.
Conclusion • This policy does not adversely impact patients based on their race, ethnic origin, disability, gender, culture, religion or belief, sexual orientation or age.
Recommendations • Following the equality impact assessment there are no changes required to the policy. • The equality impact assessment will be reviewed / re-evaluated when the policy is reviewed.

APPENDIX 4: CHECKLIST FOR THE REVIEW AND APPROVAL OF DOCUMENTS

To be completed (electronically) and attached to any document which guides practice when submitted to the appropriate committee for approval or ratification.

Title of the document: Carbapenemase-producing Enterobacterales (CPE) / Carbapenem producing organisms (CRO) Screening and Infection Prevention and Control Management Policy

Policy (document) Author: Shila Patel, Nurse Consultant Infection Prevention & Control

Executive Director: Andrea Lewis, Chief Nurse

		Yes/No/ Unsure/ NA	Comments
1.	**Title**		
	Is the title clear and unambiguous?	Yes	
	Is it clear whether the document is a guideline, policy, protocol or standard?	Yes	
2.	**Scope/Purpose**		
	Is the target population clear and unambiguous?	Yes	
	Is the purpose of the document clear?	Yes	
	Are the intended outcomes described?	Yes	
	Are the statements clear and unambiguous?	Yes	
3.	**Development Process**		
	Is there evidence of engagement with stakeholders and users?	Yes	
	Who was engaged in a review of the document (list committees/ individuals)?	Yes	Control of Infection Committee members
	Has the policy template been followed (i.e. is the format correct)?	Yes	
4.	**Evidence Base**		
	Is the type of evidence to support the document identified explicitly?	Yes	
	Are local/organisational supporting documents referenced?	Yes	
5.	**Approval**		
	Does the document identify which committee/group will approve/ratify it?	Yes	Control of Infection Committee
	If appropriate, have the joint human resources/staff side committee (or equivalent) approved the document?	N/A	
6.	**Dissemination and Implementation**		
	Is there an outline/plan to identify how	Yes	Via the Control of Infection

		Yes/No/ Unsure/ NA	Comments
	this will be done?		Committee; to be made available on TrustNet and all staff messaging to go out to inform staff about the updated policy
	Does the plan include the necessary training/support to ensure compliance?	Yes	Via Trust induction and Mandatory IPC update training
7.	**Process for Monitoring Compliance**		
	Are there measurable standards or KPIs to support monitoring compliance of the document?	Yes	
8.	**Review Date**		
	Is the review date identified and is this acceptable?	Yes	
9.	**Overall Responsibility for the Document**		
	Is it clear who will be responsible for coordinating the dissemination, implementation and review of the documentation?	Yes	The IPC Team
10.	**Equality Impact Assessment (EIA)**		
	Has a suitable EIA been completed?	Yes	

Committee Approval (insert name of Committee)			
Control of Infection Committee			
Name of Chair	David Fluck, Director of Infection Prevention and Control	**Date**	14/12/21
Ratification by Management Executive (if appropriate)			
As above			
Date: As above			