



# Guidance relating to Carbapenemase Producing Enterobacterales<sup>1</sup> (CPE) for Long-Term Care Facilities for Older People

**CPE Expert Group**

**National Guidance Document, Version 1.0**

## **Scope of this Guidance**

This guidance is intended for healthcare workers providing care to older people in long-term care facilities. For further information on the scope of this guidance, refer to page 4 of this document. Additional guidance or to confirm that you are using the most current version of this guidance, please go to [www.hse.ie/hcai](http://www.hse.ie/hcai) and [www.hpsc.ie](http://www.hpsc.ie)

## **Next review of this guidance document**

This guidance document will be reviewed in 12 months (July, 2019).

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<sup>1</sup> Recent changes in microbial nomenclature have altered the meaning of the term “*Enterobacteriaceae*” and mean that the term “Enterobacterales” now corresponds more closely to the former meaning of “*Enterobacteriaceae*”.



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## Glossary of Terms

**CPE** = Carbapenemase Producing *Enterobacterales*

**ESBL** = Extended-spectrum beta-lactamase producing Enterobacterales

**HSE** = Health Service Executive

**IPC** = Infection Prevention and Control

**LTCF** = Long term care facility

**MRSA** = Methicillin-resistant *Staphylococcus aureus*

**OCT** = Outbreak control team

**PPE** = Personal protective equipment

**UTI** = Urinary tract infection

**VRE** = Vancomycin-resistant enterococci

**WHO** = World Health Organization



## Scope

This document is intended to provide guidance related to CPE for healthcare workers and healthcare managers providing care for people in residential facilities for older people such as nursing homes and other residential long-term care facilities (LTCF) that provide a similar level of residential care. This document is intended to apply to residential social care settings where nursing care is generally required by most residents.

The document is intended to be of use to healthcare workers who have not had extensive infection prevention and control (IPC) training and who may not be familiar with IPC terms. It is also intended to be used and referred to by those who have indirect responsibilities towards the care of residents in such settings such as household staff and owner / operators and boards of voluntary bodies who have an extended remit for the care of residents.

The document points to key infection prevention and control and antimicrobial stewardship principles and practices relevant to control of transmission of CPE. It is not a comprehensive infection prevention and control manual. Resources at the following site may be helpful if additional information is needed <https://www.hse.ie/hcai/>



## Guiding principles where residents are colonised with CPE

People colonised or infected with CPE have the same right to access health and social care as everyone else and should not experience significant delays in transfers in either direction between residential care facilities, non-acute care facilities and hospitals simply because they carry CPE.

People who use healthcare services are entitled to expect that the healthcare service will take care to protect them to the greatest extent practical from the risk of acquiring CPE while using healthcare services. In the spirit of open communication regarding the risk to people using healthcare facilities, they should know that the risk cannot be eliminated entirely. Other people using the facility may be colonised with antibiotic resistant organisms such as CPE. The need to ensure that all service users get the care they need means that people with CPE must share facilities and space with other people. Those who are colonised with CPE cannot be identified to other service users by health care workers as this would breach confidentiality.

Balancing the rights of service users to protection from acquiring CPE with the right of those colonised with CPE to equitable access to service can be challenging. The approach adopted in this guidance is that everything that is practical should be done to limit the spread of CPE (and other bacteria) in all healthcare facilities while respecting the need of residents to live in a reasonably home-like setting with opportunities for social contact.



## Introduction to CPE

CPE are a type of bacteria that live in the gut and are resistant to almost all antibiotics. CPE bacteria usually do no harm if they remain in the gut: This is called **CPE colonisation**. Likewise, CPE may be found in urine samples or on swabs from leg ulcers. If there is no clinical evidence of infection, this also is colonisation or carriage. Antibiotic treatment is generally not useful in clearing CPE from the gut of people with CPE colonisation. It is important to avoid unnecessary antibiotic use in people with CPE colonisation because most antibiotics will tend to encourage multiplication of antibiotic resistant bacteria including CPE.

## Spread of CPE

CPE is shed in faeces of people who carry it in their gut. Tiny traces of faeces may directly contaminate hands and surfaces near the resident. People who are not directly contaminated may contaminate their hands if they touch contaminated surfaces. CPE can spread to other people when these traces of faeces are transmitted from hand to mouth (for example, when eating). As health care workers it is our job to break the cycle of infection where CPE spreads from one person to another by controlling this pathway of spread. This is not easy to do. Faeces is a very sticky substance and gets into all sort of places on hands, equipment and in the environment. Even when things look clean, there is often enough faecal contamination to carry CPE to another person.



It may be impossible to stop all CPE spread in all circumstances. For example some residents may have challenging behaviour due to dementia or there may be other reasons that make it very difficult to apply good IPC practice fully. Staff should not feel that their efforts are wasted if there are occasional new cases of spread.

The way we manage the risk of spread of CPE right now is very important. CPE is still fairly uncommon in Ireland and there is still time to stop it becoming so widespread that we no longer have any hope of controlling it. Control of spread of CPE and other bacteria is a long-term process.

## Why is CPE important for long-term healthcare facilities?

Frail and more vulnerable people are more likely to get infection with *Enterobacteriales* and other gut bacteria. When these infections are caused by CPE the infections usually will not respond to oral antibiotics. People with very serious CPE infection have high mortality even when treated with specialist intravenous antibiotics.

Therefore all healthcare facilities have a particular responsibility to ensure that all practical steps to limit the spread of CPE and other antimicrobial resistant bacteria in their facility.



All staff involved in the administration of LTCFs or in the care of residents of LTCFs should be familiar with the guidance for CPE and their roles and responsibilities regarding this. This includes ensuring that there are suitable governance arrangements in place for infection prevention and control. The principles of Standard Precautions that apply to care of people colonised or infected with CPE are the same principles that apply to other antimicrobial resistant bacteria. Healthcare facilities must ensure that all healthcare staff are trained in infection prevention and control relevant to their scope of practice. It is important that there are robust systems of communicating between healthcare facilities when a person with known CPE colonisation or infection is being transferred between facilities.

### **Important**

It is of primary importance that people who are infected with or colonised with CPE should not find their care compromised as a result of CPE. Transfers to and from nursing homes, acute hospital and elsewhere should follow the HSE guidance on transfer of patients with CPE between facilities (available at [www.hse.ie/hcai](http://www.hse.ie/hcai)). The care and dignity of all residents should remain the paramount concern in all situations.





## Definitions of the terms CPE Case and CPE Contact

### What is meant by the term CPE Case?

A **CPE case** is a patient in whom CPE has been detected from a diagnostic specimen (invasive, non-invasive infection or colonisation) or from a CPE screening specimen (rectal swab or faeces).

### What is meant by the term CPE Contact?

A **CPE contact** is a person that has been designated as a CPE contact by an infection prevention and control practitioner or public health doctor on the basis that the person has had significant exposure to a person carrying CPE. This may be because they spent some hours in the same hospital room as a patient known to carry CPE. This does not mean that they are carrying CPE but it means they are at a higher risk of carrying CPE compared to most people. There is a more detailed definition of a **CPE contact** in the guideline document “Interventions for Control of Transmission of CPE in the Acute Hospital Sector”, available at <https://www.hse.ie/hcai/>.

The process of designating a person as a **CPE contact** occurs in the acute hospital and is primarily intended to support control of transmission of CPE in the acute hospital setting. In some circumstances, for example if there is an outbreak of CPE transmission in a long-term care facility, CPE contacts may be identified in that long-term care facility. A decision to designate a person in a long-term care facility as a CPE contact should only be made by an infection prevention and control practitioner, a hospital infection prevention and control team (IPCT) or by a public health doctor.



## When a resident with CPE becomes ill with features that suggest infection

If you are worried that a resident with CPE has evidence of infection (for example, the individual has a fever, is more confused (delirium) or is acutely unwell) a medical review with a doctor should be sought on an urgent basis.

Although CPE can cause serious infection this is not very common. In most cases where those with CPE colonisation get a throat, chest or skin infection, the infection is caused by the kind of virus or bacteria that usually cause these infections rather than by the CPE. As with all patients, if a person with CPE colonisation has a viral infection, antibiotics are more likely to do harm than good because antibiotics are not effective against viruses. Many viral infections only require relief of symptoms but some viral infections may require antiviral medication (not antibiotics).

The World Health Organization defines sepsis as follows: *Sepsis arises when the body's response to any infection injures its own tissues and organs.*

The urinary tract is an important source of sepsis. However, a positive culture result from a urine sample does not prove that someone has a urinary tract infection (UTI). Many people, especially older people, normally have bacteria in their urine. In those without clinical evidence of UTI, antibiotics do not work and are not needed just because of bacteria in a urine sample or a positive dipstick. This principle applies equally to people with CPE in their urine samples.



If somebody with CPE colonisation has clinical evidence of a bacterial infection that needs antibiotic treatment their doctor may use the usual antibiotic recommended in national guidelines for treatment of infection available at [www.antibioticprescribing.ie](http://www.antibioticprescribing.ie)

If a resident with infection does not respond to initial treatment the GP should link with a Consultant Microbiologist or Infectious Disease Physician for advice.

If CPE bacteria get into the kidneys or into the bloodstream in vulnerable people, they can cause very serious infection (sepsis) that is very hard to treat. This is because most antibiotics do not work against CPE.

About half of people who get CPE infection in their blood (bloodstream infections) can be expected to die within about a month.

Patients who die with CPE infection are very often already very sick for other reasons but in some cases the CPE infection plays an important part causing death. Patients with suspected serious CPE infections generally need acute hospital care unless acute hospital care is contrary to their wishes or is no longer appropriate in relation to their overall care.



## Screening for CPE

Current recommendations on screening for CPE colonisation are available here:

<http://www.hpsc.ie/a-z/microbiologyantimicrobialresistance/strategyforthecontrolofantimicrobialresistanceinirelandsari/carbapenemresistantenterobacteriaceae/guidanceandpublications/>

Screening of residents of LTCF and non-acute care facilities before or during admission is generally not required. This applies even if there are residents with CPE in the facility.

Screening may be required in the setting of a Public Health Investigation, or if there is a planned (non-urgent) transfer to the acute sector from a LTCF and non-acute facility. Also, in some cases, screening may be appropriate in relation to residents that have been identified as “contacts” of CPE patients. A resident may be identified as a “contact” before they are admitted to the facility or it may only be recognised after admission that they have had contact with CPE.



## Education and Training

To support good practice National Basic Educational Requirements require that

- All staff within all healthcare settings must undertake hand hygiene training on induction and at least every two years thereafter.
- Standard Precautions training, in conjunction with Transmission-based Precautions training is undertaken on induction and at least every two years thereafter. This training should be delivered in line with the National HSE Core Knowledge and Skills Framework document (2015). Online training at HSELand includes the modules “Breaking the Chain of Infection” and “Introduction to Infection Prevention and Control”. Refer to [www.hseland.ie](http://www.hseland.ie)
- Whenever possible, training that is undertaken on-line via e-learning programmes should be supplemented with face-to-face training to allow staff voice any concerns or queries they have. Face-to-face training also allows staff to interpret the training in the context of their own work/care setting.



## Standard Precautions

Standard Precautions apply to **all** residents **all** the time in **all** healthcare settings.

Standard Precautions include, but are not limited to, these basic standards that support correct performance of hand hygiene:

- Staff should be bare below the elbow (short sleeves) in clinical and personal care areas.
- Staff should have short finger nails and have no hand and wrist jewellery or watches. One plain band such as a wedding ring is acceptable.
- Nail varnish and false or acrylic nails must not be worn at work.
- Cuts and abrasions should be covered with a waterproof dressing.

## Hand Hygiene

Staff need to carry out hand hygiene according to the World Health Organization's (WHO's) '5 Moments of Hand Hygiene' and according to the WHO the recommended technique. This includes before and after every episode of personal care for all residents all the time.



Each facility and service should determine what way of implementing hand hygiene is appropriate for their facility/service. Every facility and service needs to ensure that they have enough alcohol hand rub all the time, to facilitate hand hygiene by staff 'at the point of care'. This may require some staff to carry the toggle bottles of alcohol hand rub rather than having wall-mounted or end-of-bed bottles. Hand washing with soap and water is recommended for cleaning hands after using the toilet and if hands look dirty. Visitors to the facility should be encouraged to perform hand hygiene before and after visiting.

### **Personal protective equipment**

Appropriate use of Personal Protective Equipment (PPE) is essential. Gloves and plastic aprons are required when helping residents with personal care needs (direct person-to-person contact), and or handling body fluids or liquid. You need to take off aprons and gloves and put them in a bin after caring for each resident. Do not wear them going from resident to resident. Do not reuse them and remember to carry out hand hygiene immediately after you take off aprons and gloves.

By undertaking Standard Precautions training, you will get to know the correct sequence of putting on (donning) and taking off (doffing) PPE. Visual reminder posters are available for any facility/service that requires them.



## Environmental Hygiene

Environmental hygiene is a key factor in helping to reduce the spread of antibiotic resistant bacteria, including CPE, and infections in healthcare facilities. Each facility and service must have a robust cleaning protocol that outlines what needs to be cleaned, how often it needs to be cleaned and to what level. The protocol should say clearly when cleaning alone is sufficient (for example, floors and furniture), and when cleaning needs to be followed by disinfection (for example, commodes). Disinfection only works after cleaning has taken place. Cleaning can be performed first followed by disinfection or in some cases products that combine cleaning and disinfection may be suitable and may save time. Manufacturer's instructions must always be adhered to when using any products. Furniture, fixtures, fittings and surfaces should all be easily cleanable.





## Antibiotic stewardship

There is a need to limit the use of antibiotic treatment in facilities to those who have a specific indication for taking them.

Diagnosing infections in populations who are particularly frail can be very difficult which makes antibiotic use in LTCFs challenging. Nevertheless there is good data that suggests that antibiotics are being over-used / over prescribed in all care settings including LTCFs. For example, there is good evidence to suggest over use of antibiotic treatment for UTIs when a resident has unexplained confusion. Equally there are high levels of prophylactic (preventative) antibiotic use intended to prevent UTI in many facilities. Such practices can mean that many very resistant organisms can become very problematic for these people. Furthermore antibiotics commonly cause side effects in people who take them. Side effects can include allergy, diarrhoea, thrush and kidney damage. Some side effects are uncommon but very serious, for example long-term use of nitrofurantoin is associated with a risk of irreversible lung disease. This means that antibiotics are more likely to do harm than good if given to people who do not need them.

### Important

Taking antibiotics makes someone more likely to get CPE and probably more likely to spread CPE. If antibiotics are needed, they should be prescribed for the shortest possible time needed to treat the infection and the prescription should take account of the national antibiotic prescribing guidelines ([www.antibioticprescribing.ie](http://www.antibioticprescribing.ie)).



## Extra care for those colonised or infected with CPE

### Communication

LTCFs should be provided with all relevant information related to the IPC status of anybody who plans to transfer to the facility. Every effort should be made to ensure clear communication with a resident regarding infection or colonisation with CPE or other antimicrobial resistant organisms. A document to provide guidance on communication is under development.

If the resident wants to tell their family or friends they have CPE, they are entitled to as much privacy as possible. Their family and friends may need information also.

It is accepted that in some cases other residents or visitors may become aware or suspect that a resident is carrying CPE or other antimicrobial resistant organism either inadvertently or because the person in question chooses to tell them. Although visitors and other residents may have questions and such situations are challenging, the obligation of the healthcare work is to respect the privacy of the individual carrying CPE or other antimicrobial resistant organism.

All facilities should have a mechanism whereby the IPC status of all residents is documented and known. This is to support staff in delivering care appropriately in accordance to the person's needs. A resident must not receive sub-optimal care or inadequate attention because the staff does not know how to safely deliver the care required. It is important that there is close communication between the acute hospital and LTCF when a resident with CPE or a resident who has been in contact with CPE is being transferred in either direction.



## Placement of the resident

Residents and others with CPE should **not** be refused admission to a hospital, nursing home or any other healthcare facility because they have CPE. Most people with CPE got CPE in the healthcare system. Their care should not be compromised as a result.

When a resident with CPE colonisation or infection is admitted it is important to consider how the risk of spread of CPE is managed in the context of the overall needs of the resident and of other residents.

If possible the resident colonised or infected with CPE should be provided with a single room with their own *en-suite* toilet and bathing facilities. If this is not possible they should share space with as few people as possible (for example, a two bedded room is better than a four bedded room).

In larger facilities with more than one resident with CPE, the rooms / bed spaces of the residents with CPE should be grouped in the same area of the facility, often referred to as cohorting. If possible they should be cared for by the same staff and they should use the same toilet. If possible the same sluice area should be used for all these residents.



## Contact Precautions

Contact Precautions are one element of Transmission-based Precautions. A detailed description of Transmission-based Precautions is beyond the scope of this document but may be found at <http://www.who.int/infection-prevention/publications/core-components/en/>

Contact Precautions in addition to Standard Precautions can reduce the risk of spread of CPE. Contact Precautions also help to stop most other bacteria like methicillin-resistant *Staphylococcus aureus* (MRSA); vancomycin-resistant enterococci (VRE), and extended-spectrum beta-lactamase (ESBL) producing Enterobacterales.

Although the principles of Contact Precautions are relevant in all healthcare settings it is not appropriate to apply those principles in the same way in a LTCF or residential care facility or as they are applied in an acute hospital setting. Specifically single room isolation may be necessary in an acute hospital setting and may be acceptable for a relatively short period of time in that context but it is rarely acceptable or necessary for people in LTCFs or other residential care settings to be confined in a single room or denied social contact for extended periods.

The practical application of Contact Precautions in a long-term care /residential facility will depend on each individual person. For many CPE colonised people the risk of CPE spread to others associated with spending time in common areas to participate in social activities are probably very low if they are continent, dressed and have been supported in performing hand hygiene properly before going to the shared area/joining the group.



Residents with uncontained incontinence, urinary catheters, or challenging behaviour may need particular care. It is important that staff realise that residents with CPE may require their personal care needs to be delivered to them by staff implementing Contact Precautions in addition to Standard Precautions, while their social care needs can be delivered by staff implementing Standard Precautions.

Residents known as colonised with CPE should be supported and, if necessary, supervised in carrying out proper hand hygiene and dressing after using the toilet.

Residents colonised with CPE with diarrhoea / frequent loose stool are the highest risk for spread especially if they are also on antibiotics. Long sleeve gowns and gloves should be used when providing close personal care to such residents.



## Environment maintenance and cleaning

Surfaces should be well maintained and easy to clean. Carpets should be avoided. Soft coverings should generally be avoided in shared areas and if used should be washable. This should generally not preclude a person having a favourite chair or similar item for their personal use in their room.

If it is not possible to have separate toilets for people who are colonised with CPE, the toilet should be checked, cleaned and the contact surfaces disinfected at least twice a day. The toilet should be flushed and the contact surfaces should be cleaned and disinfected by staff immediately after use by a person with CPE and before use by another resident. There is no value in disinfecting the bowl, although it is sensible to avoid build-up of lime-scale.

In many cases those colonised with CPE who do not have a dedicated toilet / shower facility, will require a dedicated commode / urinal facilities. Bedpans and urinals should be cleaned and disinfected in a properly-working bedpan washer/ disinfectant. Ensure that bedpan washer/ disinfectants are serviced regularly.

LTCFs and non-acute care facilities that have residents with CPE generally do not need to close to new admissions. Closing to new admissions may be appropriate in very exceptional circumstances for short periods, for example if advised by an outbreak control team.



## Implications of CPE for Staff

Regular contact with residents who have antimicrobial resistant organisms is part and parcel of the life of a healthcare worker. The risk to healthcare workers from contact with residents with CPE of other antimicrobial resistant bacteria is generally very small and can be managed. The steps outlined in this guidance, especially Standard Precautions when carried out by staff with all residents all of the time, and the principles of Contact Precautions appropriately applied with residents who have CPE, not only reduce the spread of CPE in healthcare facilities, they also help protect staff from picking up CPE.

Testing staff for CPE is generally not necessary except in exceptional circumstances if advised by IPC practitioners. Otherwise healthy people who pick up CPE are not likely to get sick from it, but they might carry it in their gut for some time.



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