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| Carbapenemase-producing *Enterobacteriaceae* (CPE) |
| Information for residential and aged care staff |

Multi-resistant organisms are bacteria that have developed resistance to a number of commonly used antibiotics. One example of a multi-resistant organism is carbapenemase-producing *Enterobacteriaceae* commonly referred to by its initials CPE. Whilst CPE is common in some overseas health care settings, it remains rare in Victoria.

This information sheet will provide guidance to staff of residential and aged care facilities on how to provide care to residents who have been found to have CPE in order to reduce the risk of spreading CPE to other residents. There is also important information on transferring any resident with CPE to hospital or other care settings.

## What is CPE?

***Enterobacteriaceae*** is the name given to a family of bacteria that normally lives in our bowel. A common *Enterobacteriaceae* you may have heard of is *Escherichia coli* or *E. coli*.

**Carbapenems** are a group of antibiotics (for example, meropenem) that usually treat infections caused by the bacteria called *Enterobacteriaceae*.

**Carbapenemase-producing *Enterobacteriaceae*** (CPE) are *Enterobacteriaceae* that can produce a type of enzyme known as carbapenemase which makes the bacteria resistant to carbapenem antibiotics. These infections are difficult to treat because many antibiotics, including carbapenems no longer work against these bacteria.

## What does it mean to have CPE?

In most people CPE do not cause infection. However in some people, such as those whose immune system is weakened, CPE can become a serious problem. It may cause many types of infections such as urinary tract infections (UTI), pneumonia, abscesses and bloodstream infections.

Healthy people may carry CPE in their bowel or in a wound, without symptoms. This is called colonisation. People who are colonised with CPE are at risk of getting a CPE infection if they have an operation (especially on the prostate) or need treatment involving invasive devices, such as ventilators, urinary catheters, or intravenous drips.

## Is there treatment for CPE?

Infections caused by CPE can be very difficult to treat. There are not many options for treating CPE infections as the bacteria are usually resistant to most antibiotics. It is better that people try to prevent the infection in the first place.

## Can CPE be ‘cleared’?

A person with CPE, whether colonised or infected, can excrete CPE intermittently for many months. As a result, once a person is identified as having CPE, they should be considered potentially infectious indefinitely. This means that a person with confirmed CPE is never ‘cleared’ and always requires infection control precautions regardless of any future specimens that are negative for CPE. This position may be revised as further scientific evidence becomes available.

## Who is at risk of CPE?

People at higher risk of acquiring CPE have usually had prolonged admissions to hospitals, been treated with many antibiotics, have a number of long-term health problems or had an indwelling medical device such as a urinary catheter.

In Australia CPE infections are rare. When people do get an infection with CPE it has often been picked up when the person has had medical care overseas. CPE is found in patients in hospitals and clinics around the world, but particularly in Greece, India and South‑East Asia. More recently, transmission of CPE has been associated with medical care received in some Victorian acute care hospitals.

## Can we identify and screen people at high risk of CPE?

It is recommended that all new residents to a facility are interviewed to ascertain if they have had an overnight stay in any overseas hospital or residential care facility in the last 12 months. These people are at significantly higher risk of being colonised or infected with CPE thus should be screened for CPE. Infection control precautions outlined below should be followed whilst awaiting the result. The precautions can be ceased if the CPE screening result is negative.

If a new resident is a direct transfer from an acute hospital in Australia the hospital should inform the receiving facility if the person is suspected or confirmed as having CPE (or any other multi-resistant organisms). To facilitate communication it is also reasonable that the residential facility enquires if the person has been located in an area where CPE is known to have spread from one patient to another, also known as a transmission risk area in Victoria. If so, screening requirements should be discussed before transfer.

## What happens if a person undergoing CPE screening in a hospital is transferred to my facility?

When a transfer of a person requiring screening for CPE is planned from an acute hospital to a residential care facility, the transferring hospital should always undertake screening. If a hospital can reasonably await a result of screening, then a negative result can provide reassurance to the residential care facility (and a positive result can inform appropriate action). Residential care facilities should ideally have a screening result before accepting patients; however, a result is not needed for transfer to take place. A residential care facility should not refuse transfer of a patient awaiting a screening result. A person awaiting screening results is considered a suspected CPE case and infection control precautions for a CPE case should be followed until ‘cleared’.

## What specimen is collected to screen for CPE?

A faecal specimen should be collected to screen for CPE. In addition to faeces, the following specimens should also be considered: for patients with wounds, a swab of each wound should be collected; for patients with a urinary catheter, a urine sample should be collected; and, for patients with colostomy or ileostomy, a stomal specimen should be collected.

## What happens with the specimen tested for CPE?

The specimen is sent to your ‘normal’ laboratory to test for resistance to some antibiotics. If the specimen meets criteria for suspected CPE as detailed in the Victorian guideline on CPE it is sent for confirmation to the Microbiological Diagnostic Unit Public Health Laboratory. All confirmed CPE cases are notified to the Victorian Department of Health and Human Services (the department). The department or their delegate will contact the residential facility to discuss any specific requirements, for example, completion of surveillance form or further screening of contacts.

## How is CPE spread?

CPE is usually found in the bowel of infected or colonised people. Sometimes, it may also be found in urine and wounds. CPE is usually spread person to person through contact with someone who is infected or colonised, particularly contact with faeces, wounds or urine.

CPE may also be spread via equipment that has been shared between residents and has not been adequately cleaned (and disinfected or sterilised as required) between uses.

Specific patient-risk factors associated with higher risk of spreading CPE include: diarrhoea; faecal incontinence; colostomy or ileostomy; copious or uncontained respiratory secretions or drainage from wound/abscess; presence of a urinary catheter; as well as patients who have difficulty complying with hygiene and self-care, for example patients living with dementia with wandering behaviours.

## As a staff member, am I at risk of getting CPE?

Healthy people are usually not at risk of getting CPE. The most effective way to prevent you from picking up CPE is to follow basic infection control precautions such as hand hygiene. Hand hygiene is one of the most important ways of preventing the spread of CPE. Hand hygiene can be either washing your hands with soap and water or using an alcohol based hand rub. As per standard practice always perform hand hygiene before and after providing personal care to residents, after going to the toilet and before eating.

## How can I help prevent the spread of CPE in my facility?

Residential and aged care facilities are different from other healthcare settings, such as acute hospitals, in that elderly persons at increased risk for infection are brought together in one setting and remain in the facility for extended periods of time; for most residents, it is their home. Residents share common eating and living areas, and participate in various group activities. Since able residents interact freely with each other, controlling transmission of CPE in this setting is challenging. When a patient with CPE is in an acute hospital they are generally restricted to their room; however, in a long term care facility we need to balance psychosocial needs with infection control needs.

To help prevent the spread of CPE there are basic infection control precautions that all staff should use at all times for all residents. These are called **standard precautions**. Sometimes additional precautions are required to prevent the spread of an infection or organism, these are called **transmission-based precautions**. The transmission-based precautions required to prevent the spread of CPE are called **contact precautions**.

### Standard Precautions:

The use of standard precautions is an essential infection control strategy for the successful prevention and minimisation of transmission of infections between residents. Standard precautions will also protect staff from transmission of infections as well. Standard precautions include:

#### Hand hygiene

Hand hygiene is one of the most important infection control measures for preventing the spread of infectious organisms, particularly multi-resistant organisms. Emphasis should be placed on the importance of hand hygiene for staff, residents and visitors.

Particular attention should be made to performing hand hygiene before and after providing care for residents. Staff must ensure they wash their hands or use an alcohol-based hand rub (ABHR) after toileting residents, after contact with colonised/infected sites or contact with devices (for example, urinary catheter). The use of gloves does not remove the need for appropriate hand hygiene. Hand hygiene should be attended to **before** gloves are put on and immediately **after** they have been removed.

Residents should wash their hands after toileting, before eating and when leaving their room. If the resident’s cognitive state is impaired, staff caring for them must be responsible for helping residents with this activity. Staff should assist residents to perform hand hygiene whenever they leave their room, after going to the toilet, prior to communal activities and before eating food.

Remind visitors that they should perform hand hygiene before and after visiting any resident.

Ensure there is adequate access to hand hygiene stations (ABHR and hand basins with liquid soap and water) that are adequately stocked and maintained. Hand basins for staff should, wherever possible, be hands-free (for example, elbow operated) to facilitate appropriate hand hygiene practices and prevent recontamination of hands when turning off taps. Staff should be made aware of the proper hand hygiene technique and rationale; when, where and how, also called the “5 moments of hand hygiene”. [See the Hand Hygiene Australia website for more information](http://www.hha.org.au/) <http://www.hha.org.au/>.

Note: ABHR can be used for most hand hygiene opportunities except for when hands are visibly soiled. Hands must be washed with soap and water when visibly soiled.

#### Good aseptic technique

Appropriate aseptic non-touch technique should be used for all clinical procedures, such as wound dressings or emptying or changing urinary catheter bags.

#### Wound management

Ensure oozing wounds are covered with a dressing that will adequately contain the wound ooze.

#### Personal Protective Equipment (PPE)

Wear appropriate PPE when it is anticipated that you may have contact with a resident’s blood or body fluid, mucous membranes, non-intact skin or other potentially infectious material or equipment. Depending on the activity or procedure being undertaken PPE required may include gown, gloves, mask or eye protection. Always perform hand hygiene before putting on PPE and immediately after removal of PPE.

#### Cleaning shared equipment

Ensure that shared equipment (for example, lifting machine, commode, thermometer) is not used for another resident until it has been appropriately cleaned (and disinfected or reprocessed or if required).

Items such as slings should be dedicated to one resident’s use and must be laundered before use for another resident.

Anything labelled as single-use must be discarded after use and not reprocessed or used on another resident.

#### Routine environmental cleaning

Environmental surfaces should be adequately cleaned on a daily basis. Frequently-touched surfaces, such as door handles and bed rails may require more frequent cleaning compared to other surfaces.

#### Appropriate handling of linen and laundry items

Handle, transport, and process used linen or items requiring laundering (for example, clothing) in a manner that avoids contamination of air, surfaces and persons. If linen or resident clothing is laundered onsite compliance with the Australian Standard for Laundry Practice AS/NZS 4146:2000 is required. Linen and clothing items from residents with CPE do not need to be segregated or laundered separately if AS/NZS 4146 is complied with.

No additional precautions are required for the management of linen for CPE cases.

#### Waste management

Ensure waste is appropriately segregated into the different waste streams, for example, general, recyclable, or clinical and related waste. Storage and handling of all waste must meet the Environment Protection Authority (EPA) Victoria legislative requirements. For more information [refer to EPA Victoria’s *Clinical and Related Waste – Operational Guidance*](http://www.epa.vic.gov.au/business-and-industry/guidelines/waste-guidance/clinical-waste-guidance) <http://www.epa.vic.gov.au/business-and-industry/guidelines/waste-guidance/clinical-waste-guidance>.

#### Resident’s hygiene

Ensure a resident’s personal hygiene, skin and oral care needs are met and clothing is regularly laundered.

### Transmission based precautions (Contact precautions):

Transmission based precautions are infection control precautions used in *addition* to standard precautions to prevent the spread of certain infectious organisms. **Contact precautions** are the additional infection control precautions required for residents confirmed as having CPE (colonised or infected).

Contact precautions (in *addition* to the standard precautions listed above) include the following elements.

#### Resident Placement

When single rooms with ensuite are available, assign priority for these rooms to residents with CPE. Give highest priority to those residents who have conditions that may increase the risk of transmission of CPE, for example, uncontained secretions or excretions. When single rooms are not available, residents with the same strain of CPE can be cohorted in the same room. When cohorting is not possible you will need to consider lesser alternatives to reduce the risk of transmission, for example, shared room but dedicated bathroom facilities or shared room using a dedicated commode.

#### Gown/apron and gloves

Use a gown or apron and gloves when attending to a resident’s personal care, such as showering and toileting. Remember to always remove gown/apron and gloves **before** exiting the resident’s room and perform hand hygiene before and after all glove use. Visitors **do not** need to use gowns/aprons and gloves when visiting a resident in contact precautions unless they will be participating in personal care such as showering or toileting.

#### Equipment and instruments/devices

Use disposable equipment where possible (for example, blood pressure cuffs) or dedicate use of non-disposable equipment to any residents with CPE (for example, commode). If equipment must be shared (for example, lifting machine) for multiple residents, ensure the equipment has been cleaned and disinfected before use on another resident.

#### Environmental cleaning

When residents with CPE are suspected or known to be present, routine cleaning should be intensified. Rooms of residents with CPE should be prioritized with a weekly full clean. Daily cleaning and disinfection of the CPE case’s bathroom, frequently touched surfaces (for example, bed rails, overbed table, commode, toilet surfaces in resident bathrooms, doorknobs) and equipment in the immediate vicinity of the resident should be instituted.

Select a disinfectant or combined cleaning and disinfecting agent that is either “listed” or “registered” with the Therapeutics Goods Administration (TGA). The agent selected must be effective against the vast majority of organisms that cause hospital associated infections and for practical purposes have a fast kill time (or contact time). This will enable killing of organisms before the solution can dry, be removed or before the resident or staff are likely to re-touch the surface. If facilities use an alternative method for cleaning and disinfection, the method must be validated to be equivalent to the above.

If using a no-touch method of surface disinfection as part of your environmental hygiene program (for example ultraviolet [UV-C] or hydrogen peroxide vapour) prior cleaning is required. Follow the manufacturer’s instructions when using the selected disinfectant (that is, correct amount, dilution, contact time, safe use and disposal) or no-touch method of surface disinfection.

Terminal cleaning should take place on discharge according to the same recommendations above.

#### Participation in group activities

It is extremely important to maintain a resident’s ability to socialise and have access to rehabilitation opportunities. Residents with CPE can continue to participate in group activities unless they are unwell (for example, diarrhoea). Any oozing wounds should be covered with a dressing that contains the wound ooze.

For cases and uncleared close contacts:

* Avoid use of toilets outside of their room. It is always best to toilet residents in their own toilet so as to minimise potential contamination outside their room. If the toileting of a resident does need to occur outside their own room the toilet must be cleaned immediately after its use, or use a commode and ensure it is cleaned as well.
	+ Ensure strict hand hygiene by the resident if using equipment as part of a group session, and clean and disinfect equipment after use. Staff may need to assist residents with their hand hygiene.

Residents can attend a shared dining area and use regular dishes and cutlery. Dishes and cutlery used by residents with CPE can be processed in the usual manner.

Once close contacts are cleared, no restrictions apply.

#### Staff and resident cohorting

Staff and resident cohorting is generally not applicable if there is no evidence of an outbreak.

If there are multiple residents with unrelated CPE (not an outbreak), then consider managing these cases in a single area (for example the end of a wing or floor) with dedicated personal care attendant staff.

### Communication with residents and their families

There is a need to communicate openly and effectively with residents and their families. A CPE Factsheet has been developed and is which should form the basis of discussions with residents, family and carers.

The issue of multiple resistant organisms (or “superbugs” as they are commonly referred to in the media) can be a source of real anxiety for residents and cause inappropriate stigmatisation and excessive actions. It is of critical importance to listen to expressed concerns and speak realistically about risk. Involve family and friends if the resident consents, and ensure that there is a good understanding of what has been explained. Ask them to repeat back to you their understanding of the issue and correct any misconceptions.

Resident confidentiality must be maintained. A finding of CPE in a resident’s sample is confidential resident information. Make sure the CPE case or guardian has told you who can be informed of the finding of CPE.

## Communication to other facilities

If the resident is transferred to another facility, for example, an acute care hospital; provide clear documentation that the resident has CPE, requires a single room with own ensuite, and additional contact precautions. An example of a transfer letter for residents with CPE can be [downloaded from the department’s website](https://www2.health.vic.gov.au/infection-control) <https://www2.health.vic.gov.au/infection-control>.

## Where can I get more information?

For further information [refer to the Victorian Government, Department of Health and Human Services, *Victorian guideline on Carbapenemase-producing Enterobacteriaceae for long-term residential care facilities*](https://www2.health.vic.gov.au/infection-control) <https://www2.health.vic.gov.au/infection-control> or contact your facility manager or local infection control consultant or advisor.

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