



CPE: Information for nurses and doctors working in hospitals

Background

Enterobacterales are a group of gram-negative bacteria that include *Escherichia coli*, *Klebsiella pneumoniae*, *Enterobacter cloacae* and *Proteus mirabilis*. *Enterobacterales* are part of the normal flora of the human gastrointestinal tract and are generally not harmful. However, these bacteria can spread outside the gastrointestinal tract and cause serious infections, increased morbidity and mortality, and prolong hospitalisation.

Carbapenems are a group of broad-spectrum β -lactam antibacterials that are effective in treating many infections, including those caused by gram-positive and gram-negative bacteria. Carbapenems include meropenem, imipenem and ertapenem and are used as last line treatment for serious infections caused by *Enterobacterales* resistant to other drug classes. Carbapenemase-producing *Enterobacterales* (CPE) produce enzymes that make carbapenems ineffective.

Bacteria that are resistant to many antibacterials, such as CPE, have emerged as a significant global public health threat because there is a real risk of not having an effective antibacterial treatment available to treat patients infected with these bacteria.

The Australian Commission on Safety and Quality in Health Care published the revised **Recommendations for the control of Carbapenemase-producing *Enterobacterales*** (2021 CPE Guide) to support organisations in preventing and controlling the spread of CPE. The 2021 CPE Guide should be considered in conjunction with the **Australian Guidelines for the Prevention and Control of Infection in Healthcare**, relevant local policies and procedures, and advice from your infection control service.

Nurses and doctors play important roles in protecting patients from getting CPE. This information sheet outlines what you can do to prevent, and minimise, the spread of CPE in your organisation.



Know the risk factors for CPE

Individuals with significant comorbidities are at greater risk of becoming colonised or infected with CPE. Risk factors for CPE are:

- Overseas hospitalisation and/or surgery
- Long term hospitalisation
- Treatment in a hospital with a known CPE outbreak or endemic transmission
- Multiple, or recent exposure(s), to different antibacterial agents, especially cephalosporins, fluoroquinolones and carbapenems
- Chemotherapy in the previous 12 months
- Diabetes mellitus
- Mechanical ventilation
- Admission to an intensive care unit
- Presence of an indwelling medical device (such as a central venous catheter, urinary catheter or biliary catheter)
- Recipients of an organ or stem cell transplant.

If you are looking after a patient who is at a high risk of CPE colonisation or infection, you may need to use extra measures to keep them safe. Talk to your infection prevention and control service to find out what else you can do to reduce your patient's risk of CPE colonisation or infection.

Table 1. Summary of screening strategies based in transmission risk

Who should be screened	Level of transmission risk		
	No cases	Sporadic cases	Local transmission established or CPE endemic
Admission from high-risk settings	Yes	Yes	Yes
Admission to high-risk unit(s)	Yes	Yes	Yes
Single or periodic point prevalence surveys	Consider	Consider	Yes
Screening of contacts of confirmed cases	Not applicable	Yes	Yes
Opportunistic screening (e.g., all faecal specimens)	Consider	Consider	Yes

KEY: Yes = Screen

Consider = Consult local infection prevention and control service

Screen for CPE

Prompt identification of patients with CPE colonisation or infection allows for the rapid implementation of measures to prevent onwards transmission to other patients. Identification of colonised patients on entry to the health service organisation is important, as transmission of CPE from colonised patients has been identified as a major risk factor for the introduction and spread of CPE.¹

Screening strategies should be based on patient risk factors for CPE, whether there has been any detection of CPE, and the current level of CPE transmission in the organisation. **Table 1** provides more detail on when CPE screening is required, based on transmission risk and patient risk factors.

Consider screening for patients who have had less than 24 hours of contact with a confirmed case of CPE, but who may have an increased risk of CPE transmission or acquisition. This may be due to factors such as faecal or urinary incontinence; presence of an indwelling urinary catheter; uncontained wound drainage, or respiratory secretions; and cognitive or intellectual impairment that may result in difficulty with following instructions.



Appropriate specimen collection for CPE screening

Recommended screening specimens include rectal swabs or faeces.



Urine from catheterised patients should also be included in screening.

Specimens from open wounds, or aspirates for any tubes or drains should also be considered for screening.

Perianal swabs are not recommended except in some situations, such as anal pathology or in some neutropenic patients.

Keep your patients and their carers informed

All patients screened for CPE should be provided with information on why they are being screened, the process of screening, and what precautions will be required if they are suspected or confirmed to have CPE. A companion **fact sheet** is available for this purpose.

Use standard and contact precautions

A combination of **standard** and **contact** precautions should be used when caring for patients with a history of CPE colonisation or a CPE infection for at least the duration of the initial episode of inpatient care.

Standard precautions include hand hygiene, use of personal protective equipment (PPE) and effective cleaning of all equipment and the healthcare environment. Standard precautions should be used for all patients, regardless of their infection status.

Contact precautions include placement in a single room, use of personal protective equipment (gloves and gowns), dedicating equipment to patients, where possible, and enhanced cleaning and disinfection. Contact precautions should be used:

- When patients are colonised with CPE
- When patients are identified as being at high-risk of colonisation with CPE
- When patients are waiting for the results of screening.

Where single rooms are not available, other options for patient placement should be discussed with the infection control service.

Ensure appropriate prescribing when treating CPE infections

The optimal use of antibacterials is critically important to reduce the spread of CPE.

Control strategies for CPE should include antimicrobial stewardship (AMS) measures that minimise inappropriate prescribing, and ensure antibacterials, such as third-generation cephalosporins, fluoroquinolones and carbapenems, are only used in accordance with prescribing guidelines. Inappropriate use of these antibacterials may result in these treatments being ineffective and may necessitate a reliance on older antibacterials, such as colistin, which are associated with significant morbidity.

Prescribers should ensure the use of antimicrobials is consistent with the current version of the **Therapeutic Guidelines: Antibiotic**², seek advice from infectious diseases and/or clinical microbiology experts, and consider local susceptibility information when making prescribing decisions.



References

1. Rogers BA, Aminzadeh Z, Hayashi Y, Paterson DL. Country-to-country transfer of patients and the risk of multi-resistant bacterial infection. Clin Infect Dis. 2011 Jul 1;53(1):49–56
2. Therapeutic Guidelines. Therapeutic Guidelines: Antibiotic, version 16. Melbourne: eTG; 2019.



For more information about the Commission's work on CPE prevention and management, and to download your copy of the CPE Guide, please visit: www.safetyandquality.gov.au/cpe-guide