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# Guidance Relating to Healthcare Workers (Acute Hospital and Community) Identified as Colonised with Antimicrobial Resistant Organisms including Carbapenemase Producing Enterobacterales (CPE) or Identified as CPE Contacts

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## Scope

This document is intended to provide guidance for Occupational Health Practitioners, Infection Prevention and Control Practitioners, Public Health Doctors and Managers who may be required to provide information and support to guide healthcare workers identified as colonised or infected with AMRO including CPE or identified as CPE Contacts.

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## Abbreviations and Glossary of Terms

**AMRO** = Antimicrobial-Resistant Organisms

**CPE** = Carbapenemase Producing Enterobacterales

**ED** = Emergency Department

**ESBL** = Extended Spectrum Beta-lactamase Producing Enterobacterales

**IPC** = Infection Prevention and Control

**Isolation** = Isolation refers to accommodation of one person in a single room

**MRSA** =Methicillin-Resistant *Staphylococcus aureus*

**Person/People** = the terms person/people are generally used in this document and are in general interchangeable with the terms client, service user or patient.

**VRE** = Vancomycin-Resistant Enterococci

## Standard Precautions

Standard Precautions are the minimum infection prevention practices that apply to all patient care in any setting where health care is delivered, regardless of suspected or confirmed infection status of the person receiving care. Standard Precautions include — hand hygiene, use of personal protective equipment (such as gloves, masks, and eye-wear) and other elements as outlined in national guidance available at the following link.

<http://www.hpsc.ie/a-z/microbiologyantimicrobialresistance/infectioncontrolandhai/standardprecautions/>

## Transmission-Based Precautions

Transmission-Based Precautions are the second tier of infection prevention practices and are used in addition to Standard Precautions for people who may be infected or colonized with certain infectious agents for which additional precautions are needed to prevent infection transmission. Transmission based precautions include Contact Precautions, Droplet Precautions and Airborne Precautions. In most circumstances in relation to most AMRO additional precautions required are likely to be Contact Precautions.

## Contact Precautions

Contact precautions are measures taken in addition to Standard Precautions for people with known or suspected infection or colonisation with organisms that represent an increased risk for contact transmission. These include, but are not limited to:

1. Appropriate placement
2. Use of Personal Protective Equipment
3. Limited transport and movement of people
4. Use of disposable or dedicated patient care equipment
5. Prioritized cleaning and disinfection of rooms.

Definitions are based on documents from the US Centre for Disease Control and Prevention available at the following links.

<https://www.cdc.gov/infectioncontrol/basics/transmission-based-precautions.html>

<https://www.cdc.gov/oralhealth/infectioncontrol/summary-infection-prevention-practices/standard-precautions>

## Statement of Principle

Healthcare workers colonised or infected with an AMRO are entitled to continue to practice their profession with the minimum restrictions on their practice that are considered necessary to ensure patient safety. In most cases healthcare workers can continue to practice with minimal risk of spread of AMRO provided the healthcare worker complies with good infection prevention and control practice.

## Background

Antimicrobial resistance is a major challenge to healthcare delivery systems in Ireland and throughout the world. Control of antimicrobial resistance is grounded in improved use of antimicrobial agents (**antimicrobial stewardship**) and better control of the spread of antimicrobial resistant organisms (**IPC**). The website **[www.antibioticprescribing.ie](http://www.antibioticprescribing.ie)** is a very valuable support for appropriate antimicrobial prescribing in the community.

The most fundamental element of managing the risk of spread of microorganisms is the consistent application of **Standard Precautions** in all healthcare setting and with all people all the time. **Standard Precautions** are critical because there is no system that will immediately and consistently identify all people colonised or infected with AMRO.

Additional steps may also help to manage the risk. These include screening people to identify those carrying AMRO (including CPE) and the application of additional Transmission -Based Precautions, such as Contact Precautions in relation to people who are known to have or who are considered at high risk of having colonisation or infection with AMRO.

**Transmission-Based** precautions are applicable to delivery of in-patient care in the acute hospital setting. The approach taken in this acute-care setting is not applicable in the context of delivery of care in most out-patient and day-care settings, and furthermore is not considered necessary as the risks to patients are less. However, specific precautions in addition to Standard Precautions may occasionally be advised for staff delivering care in the community in very specific circumstances.

In all settings measures to manage the risk of transmission associated with AMRO must be balanced with the imperative of delivering appropriate care to people in a timely manner and respecting the right of people to visit relatives and friends in hospital.

For practical purposes it is useful to distinguish between skin and nose surface colonising AMRO (MRSA) and gut colonising AMRO (CPE, ESBL and VRE).

## Skin and Nose Colonising AMRO

For those AMRO that colonise the skin and nose the risk of environmental and hand contamination is more persistently present as contact of hands with the face and nose are frequent behaviours, and are more common when the person has a respiratory tract infection or nasal drip. In many cases it may be possible to eradicate or minimise surface colonisation with MRSA through application of a decontamination protocol if there is a clinical indication for doing so.

## Gut-Colonising AMRO

This group of bacteria include a number of antibiotic resistant bacteria that have been a problem for many years including VRE and ESBLs. It also includes a major new concern (CPE). There is more detail on CPE below.

These organisms spread from person-to-person through the faecal-oral route, that is to say that are shed in faeces. Traces of faeces, that are often invisible, can be transferred to hands and to other surfaces by touch. The organisms can then be transferred from hands and surfaces to the mouth either directly or from contamination of food or utensils.

It follows from the above that for those with gut colonising AMRO the principal issue is about managing the risk of faecal contamination of hands and surfaces. Provided the person is continent, fully dressed, has no behavioural disturbance and is supported as

necessary in performing correct hand hygiene and dressing after visiting the toilet the risk of person-to-person spread and environmental contamination is very low in most settings. There is no established protocol internationally for decolonisation of the gut of people with AMRO.

Regardless of known or suspected AMRO status, a person who has diarrhoea or who is incontinent of faeces must be prioritised for immediate care in the appropriate setting, to ensure dignity and respect as well as for IPC purposes.

## What is CPE?

CPE is the latest major wave of antimicrobial resistant organisms that is spreading throughout the world, including in Ireland. At the moment spread of CPE is mainly a problem in the acute hospital setting.

The gut or bowel of every normal, healthy human contains bacteria including a group of bacteria called Enterobacterales. This group of bacteria includes *E. coli* and *Klebsiella pneumoniae*. When Enterobacterales get into the bladder, kidney or bloodstream, they can cause infection (cystitis, pyelonephritis, sepsis) that may sometimes be severe and life-threatening.

CPE is a particular variant of these common gut bacteria that have become resistant to a critical group of antibiotics, the carbapenems. They are often also resistant to many other antibiotics. Although they are resistant to many antibiotics, in most other respects they are like other Enterobacterales bacteria as they are harmless when they are in the gut.

## What is CPE Colonisation?

A person who carries CPE in the gut but who has no clinical symptoms or illness related to the CPE is said to be colonised. People may also have asymptomatic CPE colonisation of urine, leg ulcers or indwelling devices. Colonisation with CPE (no clinical evidence of infection) should not be treated with antibiotics. Antibiotics do not clear the colonisation

from the gut and in fact are likely to make the colonisation more intense and last longer. People who are colonised with CPE should be given a small plastic card to show to healthcare workers to tell them that are colonised with CPE.

When people colonised with AMRO including CPE develop clinical evidence of infection more often than not the infection that they have is not caused by the AMRO. For example upper respiratory tract infection, bronchitis, pneumonia, sinusitis, skin infection and cellulitis are unlikely to be caused by CPE even in a person colonised with CPE. They are likely to be caused by well recognised and common microbes or bugs that cause the same infections in those without CPE colonisation. In a person colonised with CPE just as in everyone else these are most likely due to viral infection (upper respiratory tract and bronchitis) or the usual bacterial suspects for pneumonia (pneumococcus) and cellulitis (*Staphylococcus aureus* or Group A Streptococcus). In most cases of people colonised with AMRO, the guidance available on [www.antibioticprescribing.ie](http://www.antibioticprescribing.ie) remains appropriate most of the time.

CPE in the gut do not cause diarrhoea, vomiting or abdominal pain. In a small number of people colonised with CPE in the gut the CPE may cause cystitis, pyelonephritis or sepsis. In this case many of the antimicrobial agents commonly used in the community do not work, however, there are some antibiotics that are effective.

If a person colonised with CPE develops clinical evidence of infection they may need treatment directed towards the CPE and consultation with a Consultant Microbiologist or Infectious Disease Physician may be appropriate. If treatment directed towards CPE is required, in so far as it is appropriate given the person's overall care plan, transfer to an acute hospital is generally appropriate. See <https://www.hse.ie/eng/about/who/cspd/ncps/sepsis/>

## What do we mean by a CPE Contact?

A **CPE Contact** is a term used to refer to a person who has been identified by an IPC team or public health doctor as having had significant exposure to a person colonised or infected



with CPE and as a result of this exposure is at higher risk of being colonized with CPE. The criteria for identifying a person as a CPE contact are as specified in National Guidance documents. Identification of a person as a CPE contact generally relates to exposure to CPE in the acute hospital setting.

Being a **CPE Contact** does not mean that the person is colonized with, or carrying, CPE but the risk of them being colonized with CPE is higher than for other people. People who are CPE contacts should be given a small plastic card to show to healthcare workers to tell them that they are colonised with CPE. In most cases in the community all that is required in relation to a CPE Contact is to be particularly conscious of **Standard Precautions**.

When CPE contacts are admitted to an acute hospital they are offered testing for CPE and special precautions are taken in their care. Additional information on CPE including Fact Sheets is available at [www.hse.ie/infectioncontrol](http://www.hse.ie/infectioncontrol).

## Are Healthcare Workers at Increased Risk of carrying CPE or other AMRO?

There are a limited number of studies that address this question and those that are available are very different from each other in terms of the setting and methodology. Hence they are difficult to compare and interpret. The most relevant study with respect to CPE failed to detect CPE colonisation in any one of 177 healthcare workers working in a hospital in Israel with endemic CPE (Ritterman R *et al.* Am J Infect Control 2016;44; 1053-54). A study in Ireland reported MRSA colonisation in 4.8% of healthcare workers screened. (Edmundson SP *et al.* Eur J Clin Microbiol Infect Dis 2011).

## What is the Risk to People Receiving Healthcare from Healthcare Workers Colonised or Infected with CPE or who are Identified as CPE Contacts?

Although there have been documented instances where transmission of AMRO to people has been linked to colonised or infected healthcare workers there is no evidence to suggest that this is a major factor in the spread of AMRO in the healthcare setting. A review of 191 outbreaks of MRSA (a surface colonising AMRO) concluded that healthcare workers who were asymptomatic carriers of MRSA were the cause of no more than 3 of the 191 outbreaks (Vonberg RP *et al.* Infect Control Hosp Epidemiol 2006;10:1123-1127, Nikos U. *et al.* Antimicrobial Resistance and Infection Control 2018;7:36).

As CPE and other gut colonising bacteria live in the gut and are shed in faeces there is no reason to expect that there is a high risk of spread of CPE from a healthcare professional who is in good health, who performs careful hand hygiene after attending the toilet and who observes generally accepted patterns of behaviour for working in a health care environment (Standard Precautions).

### Specific Guidance

1. Healthcare workers with clinical evidence of infection should not be involved in direct patient care until they have fully recovered from their illness. This general principle applies equally to infection with AMRO including CPE, as it does to infections not caused by AMRO.
2. Screening of healthcare workers for colonisation with AMRO including CPE is not usually recommended as an infection prevention and control measure because there is little evidence to suggest that it helps to prevent spread of AMRO.
3. Screening of healthcare workers for colonisation with AMRO, including CPE, as an infection prevention and control measure may be appropriate in very exceptional

circumstances. This may arise where there is evidence of transmission of AMRO in a healthcare facility and the epidemiological and/or microbiological evidence gives rise to a reasonable hypothesis that a healthcare worker may be the source of spread. In such circumstances the reason for recommending screening should be explained to staff members and screening should be arranged through Occupational Health services to ensure appropriate care and confidentiality for the healthcare workers tested.

4. Being a healthcare worker is identified as an indication for screening for colonisation with MRSA on admission to acute hospitals in the National Clinical Guideline, Prevention and Control of Methicillin-resistant *Staphylococcus aureus* (MRSA). [https://health.gov.ie/wp-content/uploads/2015/09/MRSA\\_Full-Report.pdf](https://health.gov.ie/wp-content/uploads/2015/09/MRSA_Full-Report.pdf)
5. In relation to AMRO other than MRSA the standard criteria in National Guidance for identifying people who require CPE screening apply equally to healthcare workers as to others. There is no additional requirement screening related to their occupation.
6. In relation to other AMRO other than MRSA, restriction of the scope of practice of a healthcare worker colonised with AMRO including CPE is generally not required.
7. A healthcare worker colonised with and AMRO including CPE should be conscious of the need for scrupulous compliance with Standard Precautions. They should be conscious of the need to avoid work during any period of acute infectious disease and any episode of gastrointestinal disturbance associated with diarrhoea. They must avail of infection prevention and control training as required.
8. A healthcare worker colonised with AMRO including CPE should declare their status to the Occupational Health Department. The Occupational Health Service and the Infection Prevention and Control team should liaise with each other as necessary with due regard to right to privacy and confidentiality of the healthcare worker.

9. Indications regarding the status of healthcare workers as a person colonised with an AMRO should be managed on the Patient Information Management systems and Infection Prevention and Control Management systems on the same basis as other people.