Leicestershire Partnership NHS Trust

The Management of Carbapenem Resistant Organisms (CRO) Policy

This policy describes the key processes and protocols for patients colonised or infected with a multi resistant gram negative organism and an extreme drug resistant organism. It identifies the management of the patient and care delivery requirements.

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Type of policy	Clinical √	Non-clinical
Which Relevant CQC Fundamental Standards?	10 &12	

Contents

Version Control and Summary of Changes

Version number	Date	Comment (Description change and amendments)
Version 1	April 2021	Development of a new policy to provide key processes and protocols for patients colonised or infected with CRO. It identifies the management of the patient and care delivery requirements. Circulated for comments to the infection prevention and control team and key individuals within LPT and also key individuals outside the organisation that can provide an expertise review. This replaces the previous policy that included all multidrug resistant organisms.
Version 1.1	October 2022	Policy reviewed & updated in line with IPC/ national guidance issues September 2022

For further information contact: Infection Prevention and Control Team

Definitions that apply to this Policy

Beta lactam antibiotics	B-lactam antibiotics (beta-lactam antibiotics) are a broad class of antibiotics, consisting of all antibiotic agents that contain a β-lactam ring in their molecular structures. This includes penicillin derivatives (penams), cephalosporins (cephems), monobactams, and Carbapenems.
Carbapenem	A group of beta lactam antibiotics normally reserved for serious infections caused by antibiotic resistant Gram negative bacteria
Carbapenem Resistant Organisms (CRO)	These are extremely drug resistant organisms that are resistant to the Carbapenem group of antibiotics. They also routinely demonstrate resistance to other groups of antibiotics.
Carbapenemase Producing Enterobacteriaceae (CPE)	These are enterobacteriacea which have become resistant to carbapenems, a group of powerful antibiotics. The resistance is aided by carbapenemases, which are enzymes made by some strains of the bacteria, which allow them to destroy carbapenem antibiotics and so becoming resistant to them and most other penicillin-like antibiotics.
Cohort nursing of infected patients	Grouping of patients who are deemed to be infectious and nursing them within an area of an in-patient facility. It is often recommended as an overflow strategy when single room isolation is not available.
Colonisation	Colonisation is the multiplication of a micro-organism after it has attached to host tissue or other surfaces, but causing no harm to the person. People who are colonised may not display signs or symptoms of infection. .
CRO contact	A CRO contact is defined as a patient who has been in direct e.g. person-to-person) or indirect contact (e.g. contact with a contaminated environment or equipment) with another patient who is affected by CRO (infected or colonised) and is therefore at risk of CRO carriage and should be screened.
Exposure	A state of contact or close proximity to a pathogen, by ingesting, breathing or direct contact, e.g. on skin
Extreme Drug Resistant (XDR)	An extensively drug resistant organism has non-susceptibility to at least one agent in all but two or fewer antimicrobial categories
HealthCare Associated Infection (HCAI)	Healthcare associated infection is any infection acquired as the result of a course of treatment, intervention or care.
Infection	Where an organism is present at a site and causes an inflammatory response or where the organism is present in a normally sterile site.
Invasive device	A device that breaches the skins normal line of defence i.e. urinary catheters, intravenous devices.
Personal Protective Equipment (PPE)	Specialised clothing or equipment worn by employees for protection against health and safety hazards and includes: gloves, aprons, gowns, masks and eye protection.
Source Isolation	Isolation for the control of infection is used to prevent infected patients from infecting others.
Standard Precautions	Precautions that are used such as Personal Protective Equipment (PPE) and hand washing to prevent the spread of infection.

1.0 Purpose of the policy

The aim of this policy is to provide guidance to staff employed by Leicestershire Partnership Trust (LPT) with regards to caring for patients who are known or suspected of having a Carbapenamase Resistant Organism (CRO) infection or who are carriers of the organism.

2.0 Summary and Key Points

2.1 Carbapenems are a class of beta-lactam antibiotic that are active against many aerobic and anaerobic gram-positive and gram-negative organisms which includes Imipenem, Meropenem, Ertapenem and Doripenem. Of all the beta-lactam antibiotics, Carbapenems possess the broadest spectrum of activity and the greatest potency against bacteria. Because of this, they are often reserved for more severe infections or used as "last-line" agents.

2.2 Carbapenamase Resistant Organism (CRO) are bacteria that are resistant to Carbapenem antibiotics through a range of mechanisms (i.e. enzymes: e.g.KPC,OXA-48, NDM and VIM) which can destroy antibiotics in the group called Carbapenems. This makes the bacteria resistant to the antibiotic. These are categorised as follows:

- CRE - Carbapenem-Resistant Enterobacteriaceae, Must be Enterobacteriaceae and resistant to Carbapenems. May or may not produce a Carbapenamase

- CRO **-** Carbapenem-Resistant organisms, any carbapenem-resistant species (strictly, also those with intrinsic resistance). May or may not produce a Carbapenemase

- CPE **-** Carbapenemase-Producing Enterobacteriaceae, Must be Enterobacteriaceae and produce a Carbapenemase. May or may not be resistant to carbapenems.

- CPO **-** Carbapenamase-Producing Organisms, Any Carbapenemase-producing species (strictly, also those with intrinsic carbapenemases). May or may not be resistant to carbapenems.

Clinically they are all treated the same and can be covered by the umbrella term of CRO.

2.3 Bacteria live in the gastro-intestinal tract (gut) of people and animals and contribute to the digestion of food. It only becomes an issue if these bacteria are Carbapenem resistant. Whilst in the gut CRO are harmless and cause no ill effects; this is called colonisation. However CRO can cause a range of serious infections if the bacteria is outside of the gut, these include wounds, blood stream, urinary tract and respiratory tract infection and infections associated with invasive procedures or devices.

2.4 Extensively Drug Resistant (XDR) are bacteria that are resistant to virtually all antibiotics, CRO’s are one form of XDR. However, other organisms such as fungi, can also be XDR and the principles of this policy also apply to such

organisms. CRO can often be recorded in the patients records as an XDR, it is important to verify if the XDR is CRO.

2.5 Hand hygiene and decontamination of the environment are vital factors in the prevention control of CRO as it can spread between people through direct contact with each other or by touching items or surfaces that the person with CRO may have touched such as tables, toilets or equipment.

2.6 Risk factors for the acquisition of CROs (colonisation) include use of antibiotics and hospital admission, within the UK and abroad in the last 12 months.

3.0 Introduction

The purpose of this policy is to ensure that staff employed by LPT are aware of the correct procedure and precautions to take when caring for patients with known or suspected CRO or XDR organisms.

The policy will ensure that all staff employed by LPT are providing evidence based care which is in accordance with the Health and Social Care Act (2015) and the latest guidance provided by Public Health England (PHE).

4.0 Standards and Procedures

4.1 Screening considerations

4.1.1 CRO Screening: Identifying patients – see flow chart (appendix 1).

4.1.2 During the admission process all patients must be assessed for risk of colonisation. Patients who have spent at least one night in hospital outside of Leicestershire or abroad or dialysed within the last 12 months are considered to be at higher risk and may require source isolation precautions. It is not possible to check the patients status for CRO on HIS or ilab if they live or were treated out of County. If required 1 negative result required on admission

4.1.3 Patients who have spent one night in a University Hospitals of Leicestershire (UHL) hospital within the last 12 months are considered low risk and do not require isolation precautions **unless** the patient is a direct transfer.

4.1.4 Patients who are known to be carriers on admission should not be screened during the admission

4.1.5 **Contact Screening for CRO:** Patients that have been in contact (i.e. in the bay of a ward area or ward if patient has occupied more than one bay) with a patient newly identified with CRO, one CRO PCR rectal swab will be required from all patients in the bay. Rectal swabs will be taken twice weekly for a period of 2 weeks and weekly thereafter for 2 weeks during their inpatient stay. (include wounds and urine [if catheterised]).

4.1.6 A rectal swab is a specimen taken by *gently* inserting a swab inside the rectum 3-4cms beyond the anal sphincter, rotating *gently* and removing. Normal saline can be used to moisten the swab prior to insertion. The swab should have a small amount of visible faecal material on it to enable organism detection in the laboratory. Do not send large amounts of faecal material as this will not be processed.

4.1.7 Isolation of patient contacts do not usually require isolation in a single room unless the subsequent screens are positive, they can be source isolated at the bed space following a transmission risk assessment. However this may need to be reconsidered, prior to the results being received (i.e. in an outbreak situation).

4.1.8 The frequency of screening may increase if transmission of new cases are detected with the ward area or based on risk assessment of the situation. The closure of the bay or ward may be required.

4.1.9 Screening of staff is not recommended.

4.2 Identification of CRO patients

4.2.1 The microbiology department will identify positive samples, the ward staff need to contact the IPC team in LPT as soon as a positive result is known

4.2.2 To have the alert marker placed on a patients record the IPC team must be informed of any patient who has or are a carrier of a communicable infection. This can be achieved via the answerphone (0116 295 1668) or the online form located on staffnet, the link is – https://staffnet.leicspart.nhs.uk/support-services/infection-prevention-control/contact-us/ipcform/

4.2.3 Healthcare staff looking after the patient are responsible for informing the patient of their result. A CRO patient information leaflet should be provided to the patient by ward staff and the infection name. This can be located on the trusts staffnet site.

4.2.4 IPC staff will update the demographic alert on SystmOne with the date of the positive sample

5.0 Management and Isolation of the Patient

5.1 Personal Protective Equipment

5.1.1 High risk patients must be placed in a single side room with source isolation precautions until one negative CRO PCR rectal swabs is available. If the patient is found to be positive then continue with source isolation precautions and discontinue further swabbing.

5.1.2 Patients who are re-admitted and have previously been identified as a carrier of CRO must be placed in a single side room with source isolation precautions in place. No swabbing is required during their stay.

5.1.3 Gloves and aprons should be worn. Risk assessment for the wearing of face masks and eye protection if there is a risk of exposure to blood or body fluids (These may need to be worn for other potential infection i.e. Covid-19).

5.1.4 If single rooms are not available for every screened or known CRO positive patient a risk assessment must be undertaken to determine where to care for the patient. Single rooms prioritised based on:

- Patient characteristics, particularly those presenting an increased risk of secondary transmission, such as diarrhoea, incontinence, wounds with uncontrolled drainage or are colonised in the respiratory tract and are coughing.
- Patients level of self care
- Patients concordance with isolation
- Cognitive impairment which may affect concordance

5.1.5 Where cohorting of patients is not feasible, the management of CRO positive patients may sometimes require the application of Source isolation precautions and contact (transmission based) precautions in a multi-occupancy bay. Patients should remain under contact precautions for the duration of their inpatient stay.

5.1.6 Patients in the same bay should be regarded as CRO contacts, and have CRO screens when moving to other wards or acute care providers.

5.1.7 Close contacts should be risk assessed to determine patient placement whilst awaiting screening results e.g. faecal incontinence. If they are discharged before screening is performed, close contacts should have their patient records flagged for CRO screening on readmission to acute care hospitals.

5.1.8 Risk assessments should be regularly reviewed e.g. wards that have a concurrent norovirus outbreak and have a patient colonised with CRO being managed in an open bay will need to revise the appropriateness of this approach.

5.1.9 FRSM mask are required to be worn by patients and staff in all areas where there is an increased incidence/outbreak of infection. Patients will need to be risked assessed for their ability to wear a mask and the outcome of the risk assessment should be clearly documented in their systmone records.

5.2 Treatment

5.2.1 Antimicrobial treatment must be discussed with the microbiology team to ensure that appropriate antibiotics are used if necessary for a patient with a CRO infection.

5.2.2 Colonisation with CRO is not treated with antibiotics.

5.3 Movement and Transfer of patients with CRO

5.3.1 Patient movement between hospital departments or wards (e.g., X-ray) should be minimised and must only occur where there is clinical need. The receiving department must be informed prior to visit so that source isolation precautions can be taken.

5.3.2 Patients with a CRO alert (SystmOne) must be transferred on a clean chair or trolley from the department they will be attending and not the bed from their side room as this must receive a deep clean before it is taken out from the side room.

5.3.3 Staff in the receiving department who are having direct contact with patients that have CRO must wear a disposable apron and disposable nitrile gloves. PPE must be disposed of as clinical waste. After PPE has been discarded, hands must be decontaminated using soap and water followed by alcohol sanitiser. All equipment including the wheelchair or trolley used by the patient must be cleaned and decontaminated with Chlor-Clean.

5.3.4 Patients with a CRO alert on their records who require transfer to an acute trust or another community hospital, the receiving hospital must be informed and ambulance service prior to transfer and the Intercare transfer form must be completed. The infection prevention team must be informed, at the discharging hospital and the receiving hospital.

5.3.5 Patients newly isolated with CRO that are for discharge to a nursing/residential home or discharged home with home care providers should be given the appropriate information for the handover of care; the non-acute CPE toolkit must be sent. A full handover to the home or provider must be actioned prior to discharge, in order that the correct precautions can be implemented.

5.4 Visitors

5.4.1 High risk patients and patients with a diagnosis of CRO can receive visitors. All visitors need to be informed by staff of the importance to wash their hands before leaving the side room and to use the alcohol hand sanitiser outside the side room.

5.4.2 Visitors are not routinely expected to wear gloves and gowns unless they are providing personal care. Nursing staff must demonstrate to visitors providing personal care how to don and doff gloves and aprons and where to dispose of them.

5.4.3 Visitors should not use patient toilet facilities.

5.5 Outpatients Areas

5.5.1 Patients with a diagnosis of CRO that attend outpatient areas where an invasive procedure is performed (e.g. catheterisation, aspiration of body fluids, local anaesthetic procedure and wound review/dressing change) enhanced isolation precautions must be followed.

5.5.1 Outpatient areas including imaging, physiotherapy and occupational therapy where there are no invasive procedures undertaken and phlebotomy, intra-muscular/intravenous injections, standard precautions must be followed, isolation is not required.

5.6 Closure of Bays or Wards

5.6.1 Bay or ward closure may be recommended when a patient with CRO has not been isolated in a single room and there is evidence of transmission.

5.6.2 The decision to close a bay or ward areas will be made by the infection prevention team in conjunction with microbiology and the operational/site team in accordance with the UHL Managing Increased Incidence and Outbreaks of Infection in Hospital Policy. Incidence and outbreak of infection policy

5.7 Deceased Patients

5.7.1 Standard precautions must be in place during the care of a deceased patient. There is no specific risk from the body to relatives, mortuary staff or undertakers.

5.7.2 Plastic body (cadaver) bags are not necessary. Any lesions that leak should be covered with impermeable dressings. For further information refer to the LPT care of the person who has died policy.

5.8 Decontamination following patient discharge

5.8.1 Environmental decontamination is critical following the transfer, discharge or death of a colonised or infected patient. Points of particular importance (but not limited to):

- Mattresses, as sheets are not an effective barrier to passage of contamination patient-to-mattress or mattress-to-patient
- Bedframes, handrails and mattress covers should be cleaned then disinfected and the integrity of the cover assess; of the mattress cover is damaged, the mattress should be condemned. Pillows should be disposed of if the integrity of the cover is damaged or the pillow itself is soiled.
- Toilet brushes and their holder should be disposed of as part of the discharge/terminal clean.

5.8.2 Many surfaces within drainage systems will be colonised by micro-organisms in a slime layer; this is known as a “biofilm”. Antibiotic-resistant bacteria can be long-term residents within these biofilms and studies have demonstrated that hospital sinks and associated drainage systems can harbour antimicrobial resistant bacteria including CRO.

5.9 Caring for patients within their own homes

5.9.1 There is not a need for patients with CRO to have source isolation precautions implemented when they are nursed in their own homes. Standard precautions must, however, be in place at all times, as with any patient cared for by LPT staff, i.e. hand hygiene and the correct use of personal protective equipment (PPE). These measures, when used correctly, will reduce the risk of transmission to staff and other patients.

5.9.2 Please refer to the LPT infection prevention and control hand hygiene policy and the LPT infection prevention and control personal protective equipment policy.

5.9.3 All waste produced with these patients by a healthcare activity from a member of LPT staff must be disposed of as clinical waste and should not go into the normal domestic waste stream. Consideration will need to be given to setting up a special waste collection if necessary.

6.0 References and bibliography

Centre for Disease Control and Prevention: Management of Multidrug-Resistant organisms in Healthcare Settings 2006

DH. Antimicrobial resistance empirical and statistical evidence-base. A report from the department of health antimicrobial resistance strategy analytical working group (2016)

NHS Ayrshire & Arran: Extended Spectrum Beta-Lactamase (ESBL) Producing Organisms Infection Control Guidance (2010)

NHS North Yorkshire and York Community and Mental Health Services: North Yorkshire Community Infection Prevention and Control Policies and Guidance. Multi-Resistant Gram-Negative Bacteria including ESBL's (Extended Spectrum Beta Lactamase) (2008)

Public Health England. Toolkit for managing carbapenemase-producing Enterobacteriaceae in non-acute and community settings Centre for Disease Control and Prevention: Guidance for Control of Carbapenem-resistant Enterobacteriaceae (CRE) 2012 CRE Toolkit (2015)

Public Health England 2020:Framework of actions to contain Carbapenamase-producing Enterobacterales

Associated Documents

LPT Infection prevention and control hand hygiene policy

LPT Infection prevention and control personal protective equipment policy

LPT Infection prevention and control source isolation precautions policy

LPT Infection prevention and control cleaning and decontamination policy

LPT Health and safety waste policy

LPT Care of the deceased policy

Appendix1

At all risk levels ensure the following:

- **standard infection control precautions are maintained at all times**
- **effective environmental hygiene and cleaning:** prevention of faecal and environmental contamination is crucial; remain alert to episodes that risk direct transmission to others and/or environmental contamination; ensure timely and thorough cleaning
- **hygiene advice to individual and family/contacts** it is important to inform individuals and those around them to ensure they take appropriate personal hygiene measures to prevent the spread of infection, especially when using the toilet.

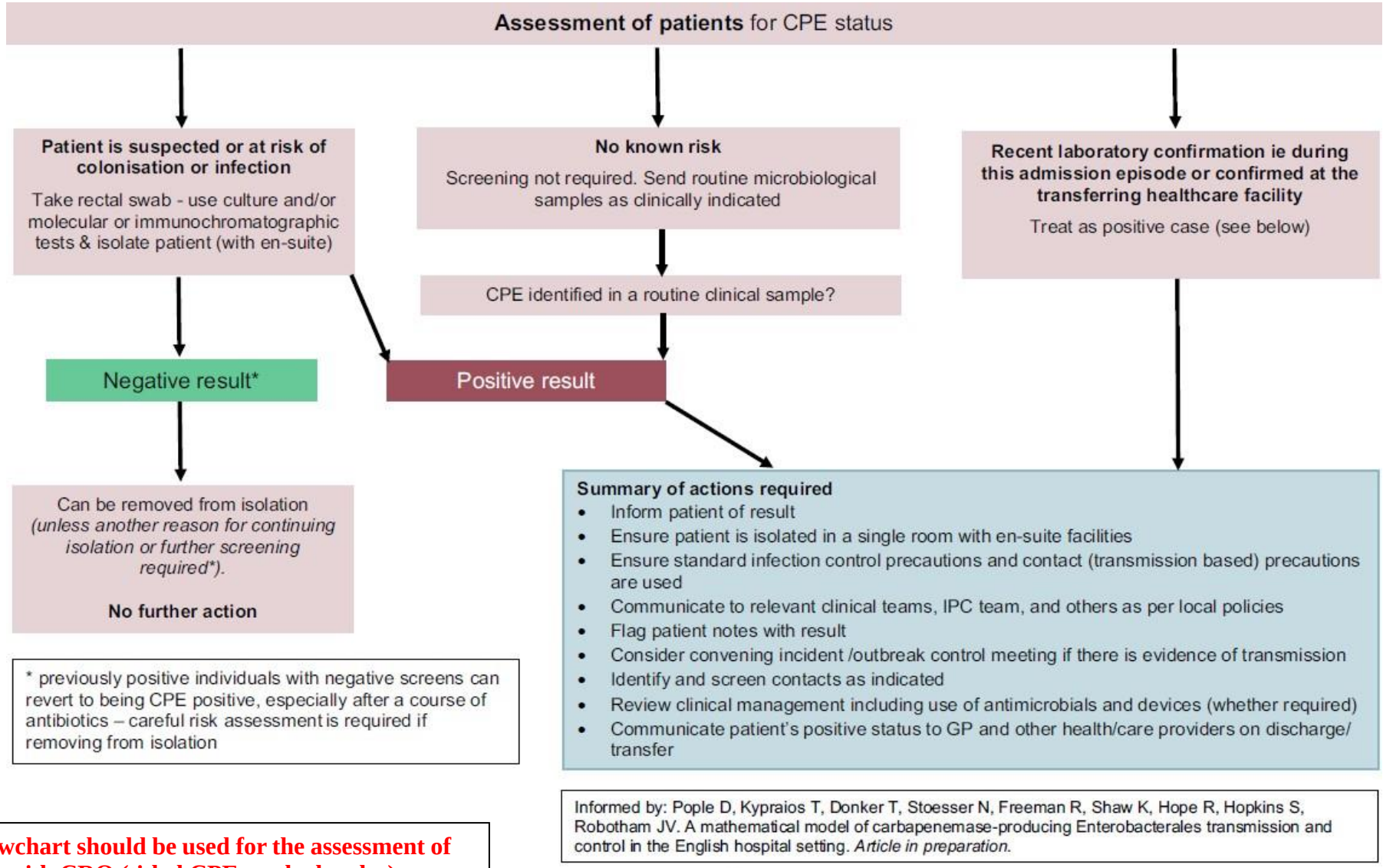
Risk assessments must include consideration of the care environment, eg nursing care setting, specialist or general-rehabilitation, haemodialysis unit, EMI, dementia care unit, community hospital or hospice, mental health trust, residential care, domiciliary care, or detention centre/prison.

If the individual is colonised: single room with en-suite facilities including toilet or designated commode is recommended; where a single room is not available, it is recommended that a designated toilet or commode is made available. No curtailment of communal activities is required where standard precautions and effective environmental hygiene are being maintained and there is no risk of transmission to others.

If the individual is infected: conduct a risk assessment with your IPC advisor and/or PHE contact to discuss possible isolation (with defined end-of-isolation criteria) consider the mental and physical health and wellbeing of the individual when deciding to isolate.

Always communicate the positive status of an individual when transferring the individual between care settings.

Care needs	Guidance for risk assessment
HIGH RISK For example, the individual has diarrhoea, faecal incontinence, smearing or 'dirty protests' discharging wound, long term ventilation, confusion/dementia, device(s) in situ, undergoing invasive procedures	• Identify if there is an immediate risk of infecting/contaminating others and the shared environment. • Discuss management with GP/clinician in charge, IPC nurse • Consider the mental and physical health and wellbeing of the individual and the level of supervision required
MEDIUM RISK For example, the individual requires assistance with hygiene, mobility or physical rehabilitation	No immediate risk of infecting others identified: • Standard infection control precautions are maintained • Hygiene advice is provided to individual and family/contacts as appropriate • Maintain effective environmental hygiene If unsure, contact your usual IPC advisor or PHE via the local Health Protection Team or Consultant in Public Health Infection, or local Community IPC Team where available
LOW RISK For example, the individual is independent and self-caring	



This flowchart should be used for the assessment of patients with CRO (titled CPE on the header)

Risk assessment tool for isolating CRO-positive patients (when isolation room capacity is limited)

➔ Ensure Infection Prevention and Control Team are notified

	Yes	**No**
Does the patient have diarrhoea? (Type 6/7 on the Bristol stool chart)	Nurse in a single room	**See questions below**

Is the patient…?	**Yes**	**No**
Continent of urine and faeces?	✓	
Alert and orientated?	✓	
Independently mobile?	✓	
➔ Consider caring for the patient in a bay on a general ward		

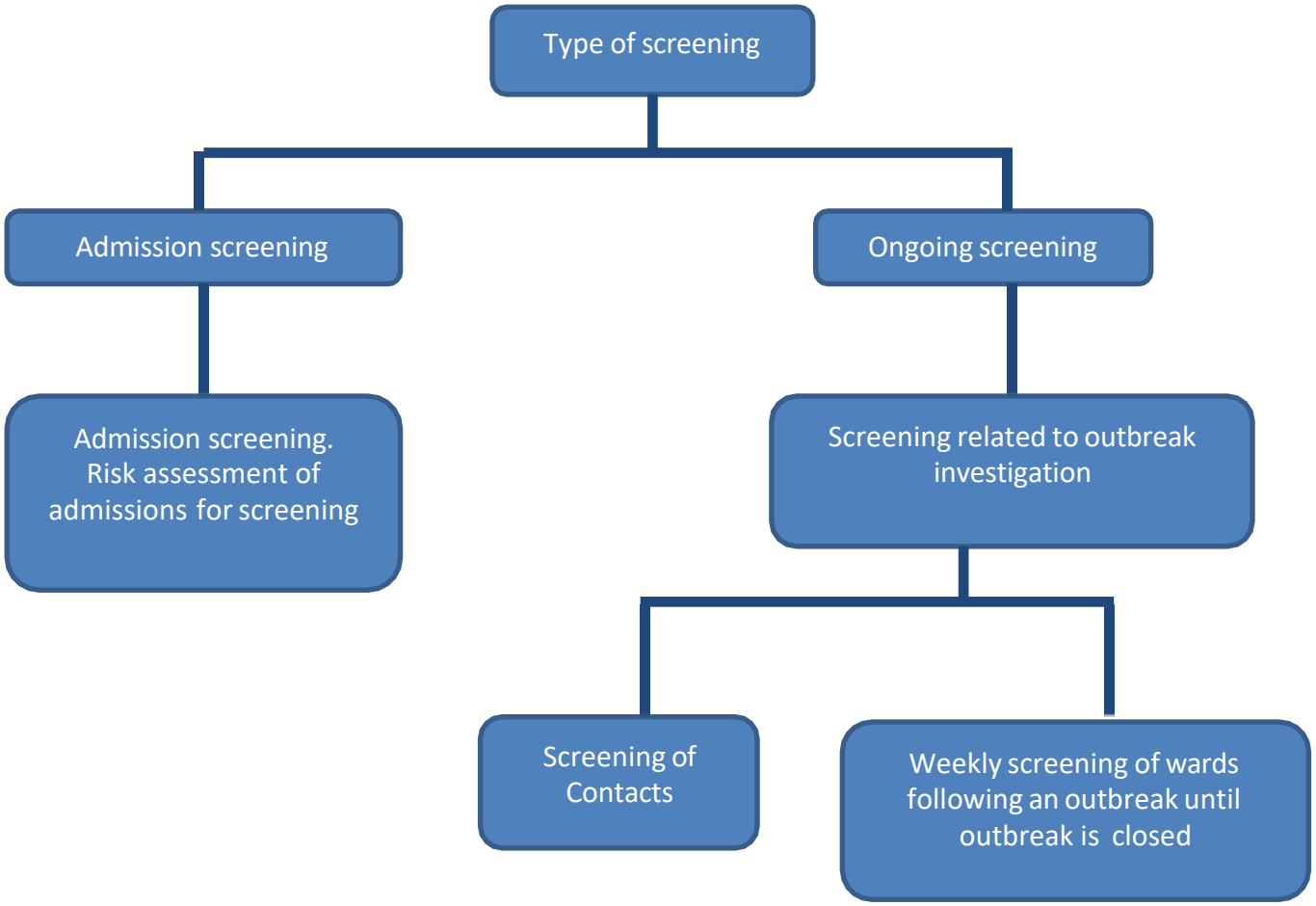
Is the patient...?	**Yes**	**No**
Continent of urine and faeces?		**x**
Alert and orientated?	✓	
Independently mobile?	✓	
➔Patient to be nursed in a single room		

Is the patient…?	**Yes**	**No**
Continent of urine and faeces?	✓	
Alert and orientated?		**x**
Independently mobile?	✓	
➔Take into account clinical environment and risk; consider moving the patient to an alternative area if confused and unable to comply with isolation in a single room		

Is the patient…?	**Yes**	**No**
Continent of urine and faeces?	✓	
Alert and orientated?	✓	
Independently mobile?		**x**
➔Patient can be nursed in a bay with a dedicated toilet/commode		

Appendix 4

Algorithm for Admission and on-going screening samples



Appendix 5

PRIVACY IMPACT ASSESSMENT SCREENING

Privacy impact assessment (PIAs) are a tool which can help organisations identify the most effective way to comply with their data protection obligations and meet individual's expectations of privacy. The first step in the PIA process is identifying the need for an assessment. **The following screening questions will help decide whether a PIA is necessary. Answering 'yes' to any of these questions is an indication that a PIA would be a useful exercise and requires senior management support, at this stage the Head of Data Privacy must be involved.**			
Name of Document:	**The Management of Carbapenem Resistant Organisms (CRO) Policy**		
Completed by:	**Amanda Hemsley**		
Job title	**Lead Infection Prevention and Control Nurse**	**Date**	**26/04/2021**
			Yes / No
1. Will the process described in the document involve the collection of new information about individuals? This is information in excess of what is required to carry out the process described within the document.			**No**
2. Will the process described in the document compel individuals to provide information about themselves? This is information in excess of what is required to carry out the process described within the document.			**No**
3. Will information about individuals be disclosed to organisations or people who have not previously had routine access to the information as part of the process described in this document?			**No**
4. Are you using information about individuals for a purpose it is not currently used for, or in a way it is not currently used?			**No**
5. Does the process outlined in this document involve the use of new technology which might be perceived as being privacy intrusive? For example, the use of biometrics.			**No**
6. Will the process outlined in this document result in decisions being made or action taken against individuals in ways which can have a significant impact on them?			**No**
7. As part of the process outlined in this document, is the information about individuals of a kind particularly likely to raise privacy concerns or expectations? For examples, health records, criminal records or other information that people would consider to be particularly private.			**No**
8. Will the process require you to contact individuals in ways which they may find intrusive?			**no**
If the answer to any of these questions is 'Yes' please contact the Head of Data Privacy Tel: 0116 2950997 Mobile: 07825 947786 **Lpt-dataprivacy@leicspart.secure.nhs.uk** **In this case, ratification of a procedural document will not take place until approved by the Head of Data Privacy.**			
IG Manager approval name:			
Date of approval			

Acknowledgement: Princess Alexandra Hospital NHS Trust

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