Trust Guidelines for the Management of Carbapenemase-Producing Enterobacteriaceae (CPE)

For Use in:	All areas within the Norfolk and Norwich University Hospital NHS Foundation Trust (NNUH)
By:	All areas within the Norfolk and Norwich University Hospital NHS Foundation Trust (NNUH)
For:	The assessment and prompt management of patients at risk of or found to be positive with CPE
Division responsible for document:	Clinical Support Services
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Name of document author:	Infection Prevention and Control (IP&C) Team Dr Catherine Tremlett – Infection Control Doctor
Job title of document author:	IP&C Specialist Nurses and Infection Control Doctor
Name of document author's Line Manager:	Professor Nancy Fontaine
Job title of author's Line Manager:	Chief Nurse and Director of Infection Prevention and Control
Supported by:	
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To be reviewed by:	IP&C Team (IP&CT) and ICD
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Version No:	2.1
Description of changes:	Minor changes made to risk assessment form and a section on page 10. Extra box added to the flow chart.
Compliance links: *(is there any NICE related to guidance)*	Public Health England (2013) Toolkit for managing Carbapenemase-producing Enterobacteriaceae in non-acute and community settings. PHE publications gateway number: 2015144
If Yes - does the strategy/policy deviate from the recommendations of NICE? If so why?	No deviation

This guideline has been approved by the Trust's Clinical Guidelines Assessment Panel as an aid to the diagnosis and management of relevant patients and clinical circumstances. Not every patient or situation fits neatly into a standard guideline scenario and the guideline must be interpreted and applied in practice in the light of prevailing clinical circumstances, the diagnostic and treatment options available and the professional judgement, knowledge and expertise of relevant clinicians. It is advised that the rationale for any departure from relevant guidance should be documented in the patient's case notes.

The Trust's guidelines are made publicly available as part of the collective endeavour to continuously improve the quality of healthcare through sharing medical experience and knowledge. The Trust accepts no responsibility for any misunderstanding or misapplication of this document.

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1. Quick reference guideline/s

Links to Quick Reference Flowcharts and Documents Some of these documents can be printed and displayed for information To open link hold the Ctrl button on your keyboard and click the link with your mouse.
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WHO 5 moments – Patient in a Chair
Laundry Poster
Clinical Clean Codes Poster
Actichlor Poster
Tristel Poster
CPE screening instructions for suspected patients
Associated Documents: Policy and Guideline Links
Chaperoning of Patients
Patient Flow Policy
Trust Policy for the Management of Isolation Procedures
Trust Policy for Cleaning and Disinfection
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Trust Guideline for Information Technology (IT) and Telecommunication Equipment Cleaning
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I am a contact of someone who is a carrier/has an infection with CPE

Risk factor assessment for patient exposure to Carbapenemase-producing Enterobacteriaceae (CPE)

Our Vision To provide every patient with the care we want for those we love the most

Norfolk and Norwich University Hospitals NHS NHS Foundation Trust

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Carbapenemase-producing Enterobacteriaceae (CPE) Risk Assessment Form

Name: DOB: Address: GP:			**To be completed for all patients at pre-admission, admission or incoming transfer to assess and manage the risk of CPE within the NNUH.**
QUESTIONS	**Yes**	**No**	**Comments**
1. Has the patient been previously colonised or infected with CPE?			
2. Has the patient been identified as a contact of a person with CPE?			
3. Has the patient been admitted (including medical tourism) abroad in the last 12 months? *			
4. Has the patient been hospitalised in the last 12 months in a UK hospital with known high prevalence of CPE? (London, Manchester, Cheshire & Leicestershire) *			

If the patient answers YES to any of the above, manage as a potential case of CPE until screening results are all reported CPE not detected.

- Advise patient they meet criteria for screening & offer patient 'I may be a carrier (or have an infection) with CPE' leaflet
- Isolate in a single en-suite room with enteric precautions and dedicated equipment.

Delays in isolation may lead to contact tracing, contact screening and an incident meeting if a positive case is identified

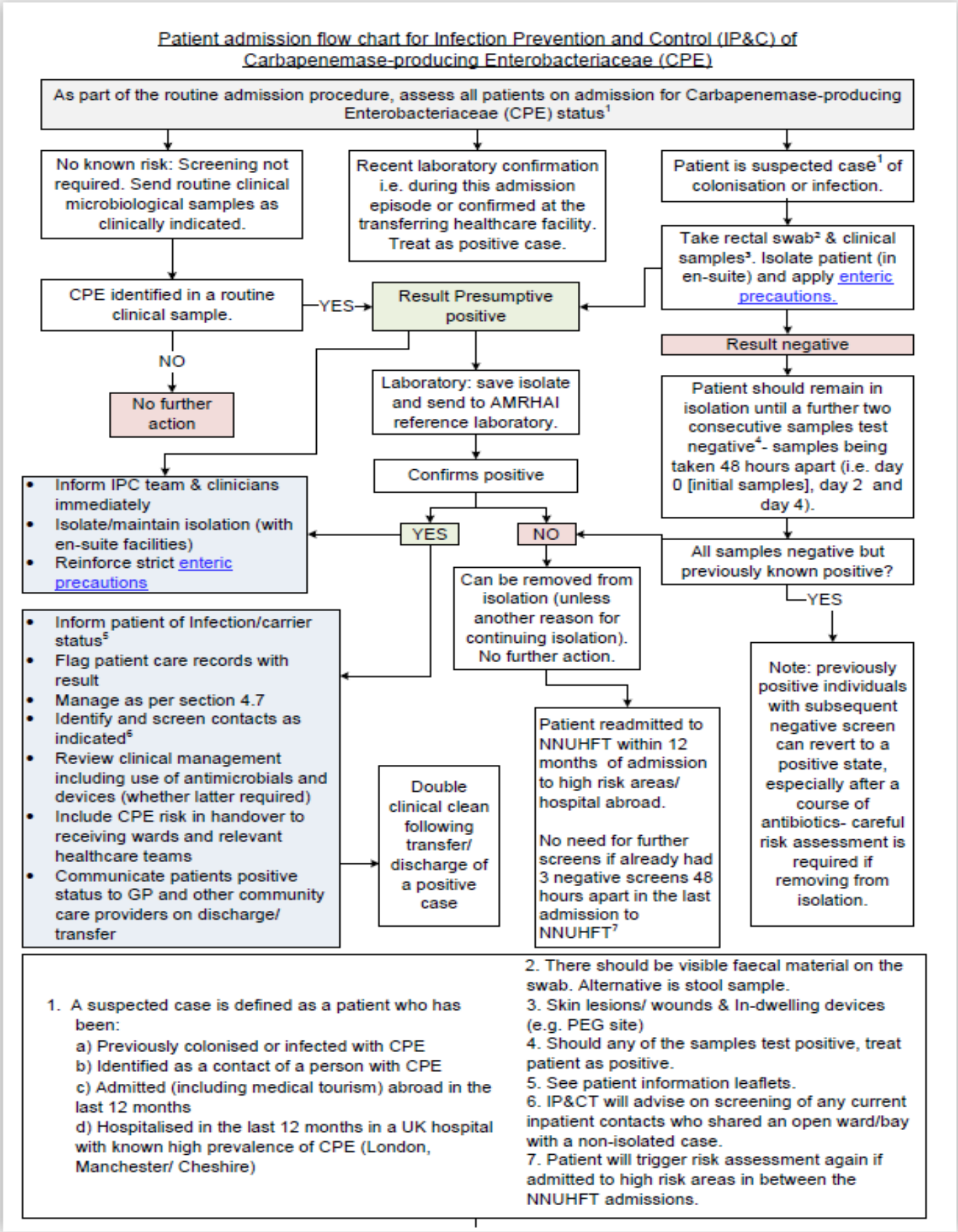
- Send rectal swab or stool sample asap for CPE screening immediately
  - Day 0 (On admission) ☐ Date: ..... Result: .....
  - Day 2 (48 hours later) ☐ Date: ..... Result: .....
  - Day 4 (48 hours later) ☐ Date: ..... Result: .....
- Refer to CPE guidelines for full management plan
- Notify IP&C team to enable accurate case tracking
- Include CPE risk in handover to receiving ward and relevant healthcare teams

*If patient has already had 3 negative CPE screens 48 hours apart since these high risk admissions and has had no subsequent admissions abroad or to high risk hospitals, these questions can be ticked **No** and comments written to explain

Name:	Signature:	Designation:	Date:

CPE Risk Assessment Form, V2 August 2019, due review in August 2022

Document ID: 12078



2. Objectives

This guideline has been written to prevent or reduce the spread of CPE infections within our healthcare setting at the Norfolk and Norwich University Hospital NHS Foundation Trust (NNUH).

The objective of this guideline is to inform staff about the toolkit and give guidance on implementing its advice into clinical practice within the Trust.

2.1 Duties and Responsibilities

All clinical staff as relevant - have a responsibility to:

- Understand, implement and abide by the information provided in this guideline.
- Be aware of the procedural documents which relate to their department/area of practice.
- Ensure they are up to date with mandatory IP&C training.
- Review patients continuing need for isolation daily in order to free up single rooms that are no longer required for isolation purposes.
- Keep the patient informed of their infection status regularly as necessary
- Pick up results and action them as per Trust guidelines.
- Attend incident management team meetings if a patient with CPE in their care.

Antimicrobial stewardship group/antimicrobial pharmacist

- Responsible for providing specialist input in antimicrobial management of CPE infection.
- Assist with developing and monitoring of Antimicrobial advice for patients with CPE infection/colonisation.
- Auditing antibiotic prescribing against Trust guidelines and policies.

Chief Executive - has overall responsibility for ensuring there are effective procedures and resources are in place to enable the implementation of this guideline.

Consultant Microbiologist/Microbiology Laboratory

- Alert IP&CT, clinical teams and ward areas of patient CPE result.
- Provide clinical specialist advice on the management of patients with CPE infection and advice/management of outbreaks.
- Provide help and advice for clinical staff.
- Review laboratory policies on screening, detection, and referral to reference laboratory.
- Ensure mandatory reporting is maintained.

DIPC - is responsible for the development and implementation of strategies and policies on CPEs. The DIPC has responsibility to ensure;

- Mandatory reporting to Commissioners and Public Health England.
- Provision of performance report to Directorates, Senior management and clinical teams.
- Provide monthly reports to Trust Board, Clinical Safety committee, Clinical commissioning groups, NNUH clinical and operational staff.

Estates - are responsible for on-going maintenance of ventilation systems and general ward environments of the isolation room.

Infection Prevention & Control (IP&C) Team - to provide specialist IP&C advice and support with regards to isolation, practices and decontamination in management of patients with CPEs.

- Assist in developing and monitoring this guideline.
- Provide appropriate IP&C training to trust staff.

Operations Centre Team - to help facilitate the isolation of patients with suspected/confirmed CPE infections or colonisation as soon as possible and at most within 2 hours of suspicion or confirmation. In any situations where safe placement cannot be achieved this will be escalated as appropriate to Executive on call and documented on the Situation Report under “IP&C issues”. The operation Centre is also responsible for resolving operational issues in outbreak situations.

Service Provider - is responsible for cleaning to ensure all areas are cleaned accordingly to the agreed standard and that their staff follows NNUH IP&C guidelines.

Ward and departmental managers/matron

- Ensure all staff in areas of responsibility are aware of and comply with this guideline.
- To ensure that staff are up to date with mandatory IP&C training.
- Assist in monitoring the guideline.
- Facilitate isolation of patients with potential/known CPE infection/colonisation as soon as possible according to NNUH policy.
- Ensure daily review of patients continuing need for isolation in order to free up single rooms that are no longer required for isolation purposes.

Workplace health and wellbeing (WHWB) - to alert DIPC/IP&CT to any infection issue amongst Trust employees that may have an impact on patients. WHWB provide advice to staff with CPE infection/colonisation.

3. Rationale

This guideline is based upon the advice in the PHE CPE toolkit (2013) which was written to provide expert advice on the management of colonisation or infection due to CPE in England. The toolkit aims to prevent or reduce the spread of CPE both into and within health and residential care settings. This toolkit is currently being revised by PHE (Sept 2018) but has not been published at the time of this guideline update.

In the UK, over the last five years, there has been a rapid increase in the incidence of infection and colonisation by multi-drug resistant Carbapenemase-producing organisms. A number of clusters and outbreaks have been reported in England, some of which have been contained, providing evidence that, when the appropriate control measures are implemented, these clusters and outbreaks can be managed effectively.

However, whilst we have seen clusters and outbreaks across England and are experiencing on-going persistent problems in the North West; we have not yet reached the escalated situation seen in other countries. Therefore, we have a small window of opportunity to learn from their experiences and prevent widespread problems in the UK.

3.1 Definitions of Terms Used and Abbreviations

Carbapenemase - Enzymes (such as Klebsiella pneumoniae Carbapenemase (KPC), OXA-48 Carbapenemase, New Delhi Metalo-beta Carbapenemase and Verona integron-encoded metallo-β-lactamase (VIM)) produced by some bacteria which cause destruction of the Carbapenem antibiotics, e.g. Meropenem, thus resulting in resistance.

Close contact - Equivalent to a household contact (8 hours), i.e. a person living in the same house; sharing the same sleeping space (room or hospital multi occupancy bay).

Colonisation - The presence of micro-organisms living harmlessly on the skin or within the bowel and causing no signs or symptoms of infection.

Community-acquired infection (CAI) - An infection that is not related to a healthcare intervention in a hospital.

Confirmed case - A patient with final laboratory confirmation of CPE infection/ colonisation from the national reference laboratory.

Carbapenemase Producing Organism (CPO) – An organism (non-Enterobacteriaceae) that has the Carbapenemase resistance mechanisms. A patient with a CPO should be managed from an IP&C perspective in line with this guideline.

Healthcare-associated infection (HAI) - An infection that occurs following or during a healthcare intervention undertaken either in the community (including the patient's home) or in a healthcare setting.

Infection - The presence of micro-organisms in the body causing adverse signs or symptoms.

Medical Tourism – A medical tourist "elects to travel across international borders to receive some form of medical treatment". Most commonly includes dental care, cosmetic surgery, elective surgery and fertility treatment, though it may span the full range of medical treatment.' OECD (2010)

Preliminary case – A patient with an initial laboratory confirmation of CPE infection/ colonisation. These samples are then sent to a reference laboratory for full confirmation.

Rectal swab – A rectal swab is a specimen taken by gently inserting a plain 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 (screening instructions). The swab must have visible faecal material to enable organism detection in the laboratory. (PHE 2015)

Suspected case - A patient who has been:

a) Previously colonised or infected with CPE

OR

b) Identified as a contact of a person with CPE

OR

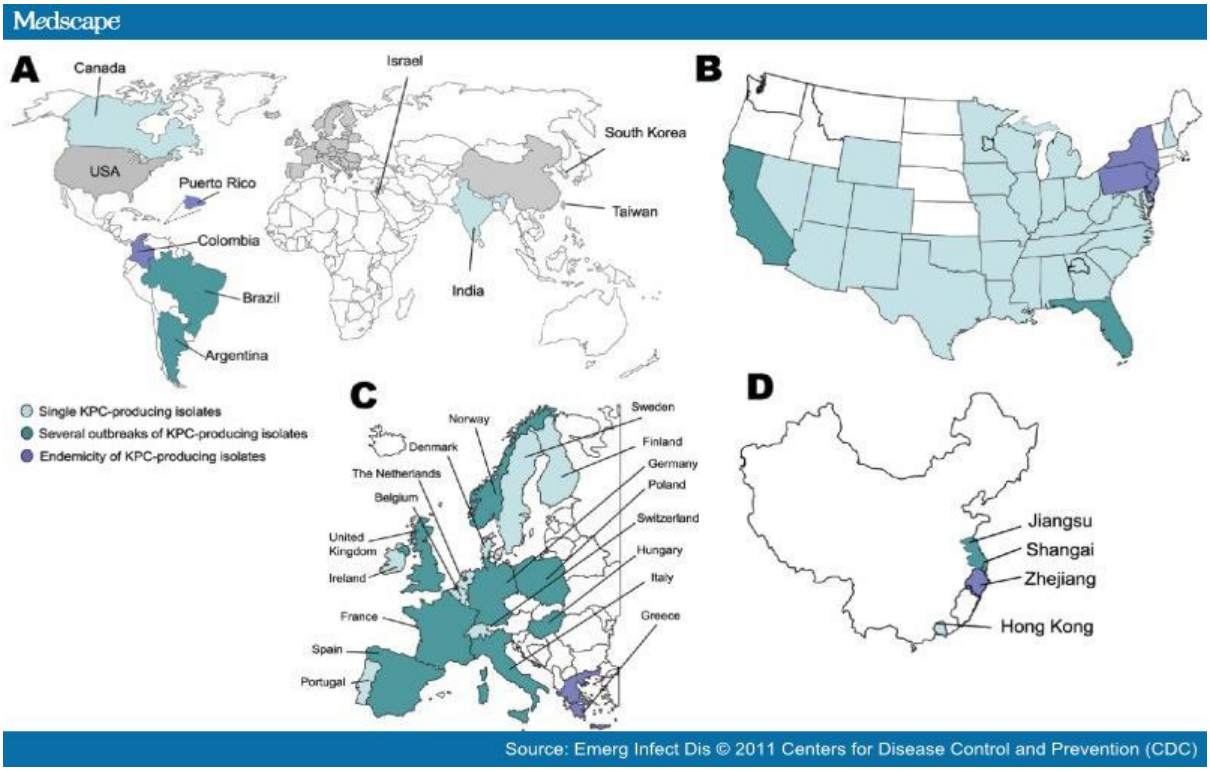
c) Admitted (including medical tourism) abroad in the last 12 months

OR

d) Hospitalised in the last 12 months in a UK hospital with known high prevalence of CPE (London, Manchester/ Cheshire, Leicestershire)

3.2 Background of CPE and high prevalence internationally and in UK

Carbapenemase-producing Enterobacteriaceae (CPE) produce enzymes that can efficiently hydrolyse and confer resistance to most β-lactams, including the carbapenems. In addition, many CPE strains frequently carry additional genetic determinants that confer resistance to other non-β-lactam antibiotics, making these bacteria resistant to most antibiotics. The emergence and spread of CPE is a public health threat, especially because infections caused by CPE are associated with an increase of morbidity, mortality, and healthcare costs. Curbing the spread of CPE after their importation into healthcare facilities is important, as is controlling transmission in areas where they have become endemic, because they are associated with poor patient outcomes.


Medscape
A
Canada
Israel
South Korea
USA
Puerto Rico
Taiwan
Colombia
India
Brazil
Argentina
Single KPC-producing isolates
Several outbreaks of KPC-producing isolates
Endemicity of KPC-producing isolates
B
C
Norway
Sweden
Denmark
Finland
The Netherlands
Germany
Belgium
Poland
Switzerland
United Kingdom
Hungary
Ireland
Italy
France
Greece
Spain
Portugal
D
Jiangsu
Shangai
Zhejiang
Hong Kong
Source: Emerg Infect Dis © 2011 Centers for Disease Control and Prevention (CDC)

UK regions/areas where problems have been noted in <u>some</u> hospitals:
London
North West; especially Manchester and Cheshire.
Leicestershire – added in July 2018 as a high risk UK area

IMPORTANT: Healthcare providers have a 'duty of care' to proactively communicate any problems they are experiencing with CPE, not only with colleagues in healthcare settings which are co-terminus, but with any organisation they deal with on the patient pathway, either routinely or sporadically.

PHE have also implemented mandatory reporting of all laboratory confirmed cases of CPE since May 2015. Information from this will be used to update the UK prevalence data in due course.

4. <u>Broad recommendations</u>

4.1 Early recognition of individuals who may be colonised/have an infection

This risk assessment must be used as part of the routine admission procedure to identify suspected cases of colonisation or infection with CPE.

Assess each patient at pre-assessment, admission and transfer/repatriation taking a thorough history and asking the following key questions:

Has the patient been?

a) Previously colonised or infected with CPE*
OR
b) Identified as a contact of a person with CPE
OR
c) Admitted (including medical tourism) abroad in the last 12 months**
OR
d) Hospitalised in the last 12 months in a UK hospital with known high prevalence of CPE (London, Manchester/ Cheshire, Leicestershire)**

*Check Patient Administration System (PAS)/ICE for an electronic alert as any patients with a positive CPE result previously known to NNUH should have an electronic alert in place.

If the patient answers **no** to all four questions above, document this in the patient care record or pre-assessment paperwork and manage as per standard protocols.

If the patient answers **<u>yes</u>** <u>to any</u> of the four questions above, manage as a potential case of CPE and follow each stage of this guideline whilst screening is undertaken.

****If patient has already had 3 negative CPE screens 48 hours apart since these admissions and has had no subsequent admissions abroad or to high risk hospitals then patient can be deemed low risk and managed as per standard protocols i.e. will not require re screen.**

4.2 Early isolation of suspected and laboratory-confirmed cases

If the patient has already had a laboratory-confirmed infection or colonisation with CPE ***or*** meets the criteria for a suspected case then:

- Advise the patient (and relatives if appropriate) that they meet the criteria for screening due to the risk of CPE and your management plan – provide "CPE screening information leaflet" patient information leaflet.
- Immediately place the patient into a single room with en-suite facilities according to the priority of isolation guideline.
- Apply enteric precautions in all settings with dedicated equipment as per section 4.7.
- The following factors will increase the transmission risks and need to be considered carefully:

Diarrhoea	Discharging wounds	Medical devices in situ
Incontinence (faeces or urine)	High risk of wandering /unable to comply with IP&C requirements	Ventilator support requirements

4.3 Prompt sampling to detect CPE

Screening samples for patients at risk of CPE should be collected on admission followed by a further 2 screens separated by 48 hours (e.g. admission =day 0, day 2 and day 4).

What samples to take?

- Take a rectal swab using a plain swab with informed consent and in conjunction with the Chaperoning of Patients policy.
- A rectal swab is the best sample type to achieve speedy and accurate results; to ensure detection of the organism there must be visible faecal material on the swab and then placed in the swab casing (screening instructions).
- A rectal swab may be contraindicated for haematology patients and those at risk of bleeding; discuss with clinician to confirm appropriate sampling method.

Or

- Collect a stool sample (ensure any delay in collection is clearly documented in the patient care record).

AND (using separate charcoal swabs)

- Swab skin lesions and wounds.
- In-dwelling devices e.g. PEG site (excluding peripheral cannula and long term intra vascular devices e.g. Hickman line unless clinical signs of infection).

Request a 'CPE Screen' on ICE under the microbiology tab. List the sample site and patient risk factors in the global clinical details section of the request.

4.4 Results of CPE screening/clinical samples

Clinical teams are responsible for checking and acting on laboratory results. Clinicians are also responsible for informing the patient of their screening results.

If the first result is **NEGATIVE,** a further two negative samples after 48 hour periods (e.g. day 2 and day 4) need to be achieved and a risk assessment undertaken before removing from isolation (ensuring other potential infections have been excluded).

If the patient is **POSITIVE** on screening/clinical samples for CPE a preliminary PCR report will be released followed by the culture result. The patient should be informed, offered a patient leaflet and managed as per section 4.7 for the duration of their inpatient stay.

4.5 Communication

Effective communication is crucial to ensure that the risks of transmission and clinical infection are minimised.

- Patients must be informed of the screening process (leaflet available) and notified of their results (whether CPE is detected or not)
- CPE results to be included on nursing and medical handovers
- Notify receiving units and include information about positive result on all transfer/admission documents (if moved to another healthcare setting or referred for community care)
- CPE screening results must be included on all discharge letters for GP reference
- CPE electronic alerts will be added to PAS and ICE
- Notify IP&C team if any patients are transferred with a known CPE positive result or are being traced as potential contacts from another healthcare facility.

4.6 Early detection – screening contacts of confirmed cases

Screening of contacts (based on the likelihood of exposure) may be required if a patient is found to be positive for CPE and spent time in a multi occupancy bed space. Screening will be directed by the IP&C team with the aim of identifying any further cases and instigate further control measures.

Provide information leaflet "I am a contact of someone who is a carrier/has an infection with CPE" **and** undertake screening for contacts of a positive case on the advice of the IP&C team based on the likelihood of exposure as follows:

- Screening of patient contacts of a positive case SHOULD be undertaken if the case had spent time (≥8 hours) or remained in an open ward or bay with other patients before (or despite) having a positive CPE result.

- Screening of household contacts and healthcare staff is NOT required. The main focus should remain on promotion of enteric precautions throughout, especially hand hygiene.
- It is not necessary to isolate contacts whilst awaiting screening results – cohort such contacts if possible and/or reiterate strict standard precautions, particularly hand hygiene for staff and patients and decontamination of shared equipment.
- Screen all patients in the bay (or ward, if patient has occupied more than one bay) on a weekly basis for a period of 4 weeks after the last case was detected.
- Restrict screening to patient contacts remaining in hospital.

Should any contact screen positive, manage as positive case (see above), this will also require an assessment as per the Major and Limited Outbreak policy .

In discussion with the local PHE Centre, screening the whole ward *PLUS* discharged patients who occupied the bay (or ward, if case occupied more than one bay) at same time as case may be considered by the DIPC and IP&CT.

4.7 Managing a patient with a CPE (colonisation/infection)

Infection Prevention and Control key measures summary		
Precaution/ measure	**Yes/No or N/A**	**COMMENTS**
Isolation	**Yes**	Isolate patient in a single room with enteric precautions if risk factor triggered. Positive (currently or previously) should remain isolated for the duration of their inpatient stay.
Can patients be cohort nursed? (multiple patients in one bay)	**No**	Only under special circumstances as directed by the DIPC.
Gloves	**Yes**	Wash hands with soap and water after removing gloves. Change gloves and decontaminate hands when moving from contaminated site to a clean site of the same patient
Aprons/Gowns	**Yes**	Where any part of staff uniform/clothing not covered by a standard apron is expected to come into contact with the patient, a **long sleeved disposable gown** should be used (e.g. when assisting movement for a dependent patient, bed bathing, wound dressing changes)
Mask & eye protection	**Risk assess**	If there is a risk of bodily fluids splashing/contaminating your face or undertaking an aerosol generating procedure.
Dedicated equipment	**Yes**	Dedicated observation equipment (blood pressure cuff, thermometer, and stethoscope). Non-dedicated equipment must be thoroughly disinfected after use.
Cleaning measures	**Yes**	Daily cleaning and disinfection with Trust approved disinfectant is a key control measure. Clinical clean code 2 for discharge cleaning (double clinical clean for positive CPE cases). Mattresses must be checked prior to cleaning and disinfecting. Further detail in section 4.9.
Linen and Waste		Treat as 'infected' as per Linen bagging procedure and as clinical waster as per the Waste policy
Precautions in operating theatres	**Yes**	Requires careful planning & communication. Last on the theatre list to enable thorough post case clinical clean No. 2 Enteric precautions to be maintained. See section 4.10

Antibiotic Management	**Clinically assess**	If signs of infection, contact Duty Medical Microbiologist for clinical review and advice.
Visiting restrictions	**Risk assess**	Visitors must follow IP&C precautions (PPE & hand hygiene)
Patient/relatives information	**Yes**	CPE leaflets available for screening, contacts & positive results (See information leaflets section).
Inform Workplace Health & Wellbeing	**Risk assess**	Unless managing an outbreak in which staff screening is required as directed by the DIPC or a member of staff is found to be colonised/ infected with CPE.
Inform others	**Yes**	Ensure other departments/wards are notified of status and necessary precautions as appropriate when patient is transferred for diagnostic/ therapeutic purposes
Discharge	**Yes**	CPE patients can be discharged to community settings but their status must be clearly communicated in advance of the discharge and the GP notified in the discharge letter.

4.8 Additional services, investigations and interventions

All additional services, investigations and interventions will need to be risk assessed based on the clinical need and the CPE status of the patient. The IP&C team can assist in this risk assessment process if required.

Diagnostic tests
Should a patient who is colonised or has an infection require a diagnostic test or procedure which cannot be undertaken in the patient's room, the procedure should be planned at the end of the day's list and the room and equipment clinically cleaned after use.

Outpatients
Known CPE positive patients (check PAS/ICE alerts) should be planned at the end of the clinic list if possible to enable thorough environmental cleaning to be undertaken following the appointment. Effective and thorough standard precautions, environmental and equipment cleaning must be followed strictly for all patients in these departments given the restrictions in identifying these patients prior to arrival in clinic. For all patients, if an admission is being planned, the risk assessment questions must be completed and the receiving ward/department must be notified of the need for isolation facilities with enteric precautions and the need for CPE samples as per this guideline.

Renal dialysis patients:
The renal dialysis unit must actively risk assess and screen any patients who have lived/received healthcare in areas with a known issue of CPE and/or healthcare contact overseas. Patients who are coming to NNUH for temporary 'holiday' dialysis should be screened by their home unit prior to arrival and again on arrival at NNUH ensuring they have 3 complete CPE screens; these patients must be isolated until these results are reported negative. Known CPE positive renal dialysis patients should be isolated and managed as per section 4.7 for the duration of their dialysis treatment. CPE samples may be required for our NNUH dialysis patients wishing to receive holiday dialysis at another unit, these should be collected to facilitate the holiday and repeat samples will be required on return.

Pre Assessment clinics/departments

Patients should be risk assessed based on the criteria list in section 4.1 and clear documentation of this risk assessment and any subsequent actions (e.g. screening samples and need for isolation) must be clearly recoded and handed over to the receiving/admitting ward or department to complete.

Therapy services
All therapy services will continue as clinical need dictates. The patient should be visited last if practicably possible. All therapy staff will adhere strictly to the use of appropriate PPE, hand hygiene and the thorough decontamination of any equipment used during their assessment in line with section 4.7.

Non-essential services
Non-essential services including the following; Newspaper trolley, Library trolley, sweet trolley, hospital radio will not go into the CPE rooms but will continue on other areas of the ward not used for CPE patients. Patients requiring items can request that staff to go to the trolley on their behalf.

Porters
When moving patients on beds/wheelchairs to or from the isolation rooms, there is no requirement to wear gloves, aprons or other PPE unless there is a requirement to physically assist the patient in any way. Hands must be washed with soap and water when entering and leaving the patient's room. Trolleys and wheelchairs used to transfer patients must be thoroughly cleaned and disinfected after use for a patient transfer with a trust approved disinfectant.

Visitors
All visitors entering an isolation room should be advised to use aprons and gloves and wash their hands with soap and water before and after each patient contact. Any refusal to do so should be addressed by senior members of the clinical team and records of advice given be documented in the patient's Patient Care Record (PCR).

Ambulance Transport
In a similar way to transporting any patient, standard precautions should be adopted and routine cleaning of trolleys and equipment between patients undertaken. If there is any contamination from a leaking wound or faecal contamination, a clinical clean of the vehicle will be required. (PHE 2015)

4.9 Cleaning (Routine and Terminal Cleaning)

Daily cleaning
Isolation rooms must be cleaned on a daily basis by domestic services using a Trust approved detergent and disinfectant as per the Cleaning and Disinfection Guideline. The patient should be encouraged to minimise their belongings being stored on surfaces in the room to allow the domestic staff to clean the room effectively.

Scrupulous cleaning and disinfection of all surfaces is required with particular attention to those that may have had patient or staff hand contact.

Trust staff are responsible for cleaning and disinfecting the dedicated Trust equipment in the isolation room on a daily basis.

- Patient wash water, body fluids or secretions, must not be discarded down a clinical hand wash basin as this poses a high risk of environmental contamination.
- Pulse oximiters require normal cleaning and disinfection or single-patient use only.
- Blood pressure cuffs should be single-patient use only.
- Stethoscopes and thermometers should be single-patient use only.
- There are no extra decontamination requirements for endoscopes above the normal organisational procedures. Any additional attachments used must be single use or reprocessed through the endoscopy decontamination unit as per policy.
- Unused wrapped single-use items in the patient's immediate vicinity (that may have become contaminated by hand contact) should be discarded. The burden of this may be minimised by keeping limited stocks near the patient.
- Tubes of ointment and lubricant should be disposed of.

Cleaning following discharge/transfer

Patients who remain "at risk of CPE" at the point of transfer /discharge (i.e. first samples negative but awaiting all 3 screening results) should have their rooms, beds, mattresses and equipment cleaned using a code 2 clinical clean which must be signed off by a member of Trust staff

Following discharge/ transfer of the patient found to be **positive for CPE**, the room and its contents should be cleaned and disinfected thoroughly **twice**. The room must be prepared and any clinical equipment must been decontaminated according to the Cleaning and Disinfection Guideline and the manufacturer's instructions.

A clinical clean No. 2 should then be ordered (via iSERCO or ext. 3333), this should be completed, checked and signed off by a member of Trust staff and then **after 1 hour** a second clinical clean should be requested, completed and signed off.

A double clean is required for any cases of confirmed CPE due to the risks of environmental contamination and the challenges of assurance with manual cleaning processes and visual quality check.

Special attention should be paid to removing all faecal soiling, and in particular to cleaning of furniture, toilets, commodes, call bells etc. fittings, and to horizontal surfaces.

- All mattress and pillow covers should be inspected (unzipped), cleaned and disinfected by clinical staff and replaced if torn or leaking as per the Hospital Mattress Assemblies: Care & Cleaning.
- Dynamic mattresses must be cleaned, bagged and then sent off site for thorough decontamination as per the protocol for infected mattresses.
- As part of the clinical clean all curtains must be removed from the bed space. Should curtains become soiled and require changing whilst the patient is in the room (request a curtain change via iSERCO/ ext. 3333).

- Trust staff must inspect and sign off all clinical cleans as per the Cleaning and Disinfection Guideline.

4.10 Theatres

Reducing the risk of introducing CPE into the theatre environment is crucial to minimise the risks of clinical infection and surgical site infection with these highly antimicrobial resistant organisms.

- Theatre staff must be notified in advance of a patient's CPE status (at risk (i.e. screen in progress)/colonised/infected) which should be identified in pre-assessment or from the inpatient ward.
- The patient should be admitted directly to the theatre for their anaesthetic/preparation.
- PPE should be worn as per section 4.7, by all theatre/recovery personnel for all direct patient contact and hands decontaminated following PPE removal with soap and water.
- 'Do Not Enter' signs should be placed on the entrance doors to prevent staff entering unnecessarily and the telephone should be used to contact staff rather than opening theatre or anaesthetic room doors.
- The patient's bed must be clearly identified and stored securely to ensure it is not removed/ transferred to another patient.
- Numbers of personnel in theatre for infected cases should be kept to a minimum as is standard practice
- Large items of equipment not in use should be removed from the theatre prior to the case commencing.

Theatre Recovery
Following the operative procedure the patient is recovered in a designated recovery area for 'infected patients'. The allocated recovery staff member must remain with that patient until s/he is returned to the ward.

If the patient has open wounds where containment of fluids is not possible or other transmission risks, i.e. burns they should be recovered in the theatre prior to transfer back to ward.

Theatre and recovery cleaning
It is preferable that patients with CPE/ those identified as "at risk of CPE" go at the end of morning or afternoon lists to allow staff time to undertake thorough clinical cleaning with Trust approved disinfectant to remove any potential contamination effectively from all equipment and surfaces.

The Theatre may be used after a CPE case. "There is no reason for a standard theatre to 'rest' for more than 15 minutes in terms of air exchange before a clean procedure is performed, however the cleaning and drying time will exceed this limit. (Hospital Infection Society Working Party 2002).

A double clean is required for any cases of confirmed CPE that attend theatres as per the rest of the Trust given the risks of environmental contamination and the challenges of a manual cleaning process and visual quality check.

Transfer of patients
It is not necessary for the theatre support worker to wear protective clothing when transferring the patient to/from the ward unless direct patient contact is required. Adequate protective clothing should be worn when transferring the patient to/from the operating table.

5. Clinical audit standards

Please refer to Monitoring Compliance / Effectiveness Table

6. Summary of development and consultation process undertaken before registration and dissemination

The authors listed above drafted this document on behalf of the IP&C Department who have agreed the final content.

During its development it has been circulated for comment to:

Hospital Infection Control Committee (HICC) members	Matrons and Senior Nurses
Operations Centre Team	Communications Team
Health and Safety Department	Ward Sisters and Charge Nurse
Workplace Health and Wellbeing	IP&C Link nurses

7. Distribution list/ dissemination method

This guideline will be published in the IP&C Manual on the Intranet and available through Trust Doc's, therefore available electronically.

Staff will be notified of the publication of new and revised documents through the Trust weekly communications bulletin and/or communications circulars as appropriate.

8. References

Hospital Infection Society Working Party (2002) Behaviours and rituals in the operating Theatre; A Report from the Hospital Infection Society Working Party* on Infection Control in Operating Theatres. Accessed on 15/06/2015 from http://www.his.org.uk/files/2313/7338/2940/Theatre_rituals..pdf

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Organisation for Economic Co-operation and Development (OECD) (2010) Medical Tourism: Treatments, Markets and Health System Implications: A scoping review http://www.oecd.org/els/health-systems/48723982.pdf

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Public Health England, (2014). Acute trust toolkit for the early detection, management and control of Carbapenemase-producing Enterobacteriaceae. Relevant literature and resources. PHE publications gateway number: 2014107
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/329232/CPE_Acute_Trust_Toolkit_Relevant_Literature_and_Resources.pdf

Public Health England (2015) Toolkit for managing Carbapenemase-producing Enterobacteriaceae in non-acute and community settings. PHE publications gateway number: 2015144
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/439801/CPE-Non-AcuteToolkit_CORE.pdf

9. Source Documents

Public Health England, (2013) Acute trust toolkit for the early detection, management and control of Carbapenemase-producing Enterobacteriaceae.
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/329227/Acute_trust_toolkit_for_the_early_detection.pdf

Element to be monitored	***Lead Responsible for monitoring***	***Monitoring Tool / Method of monitoring***	***Frequency of monitoring***	***Lead Responsible for developing action plan and acting on recommendations***	***Repor arrang***
Communication of CPE positive cases	IP&C team	Discharge letter audit	Annual	IP&C team	Hospi Contr (HICC
Prompt isolation of patients with CPE positive results	IP&C team	IP&C database and Datix reports	Quarterly	Matrons and Operations Team,	HICC

10. Monitoring Compliance / Effectiveness Table

Document Name: Trust Guideline for the Management of Carbapenemase-Producing Enterobacteriaceae (CPE)
Document Owner: Infection Prevention and Control Team