Document Control

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CONTENTS

1. Purpose

This policy is to detail the Trust's approach to managing the spread of resistant organisms known as Carbapenem Resistant Enterobacteriaceae (CRE). It is based on national guidance issued by Public Health England

It covers identification of patients who should be suspected of colonisation, screening of patients and management of patients who are suspected or are confirmed as being colonised

The policy applies to all Trust staff.

2. Definitions

2.1 What are Carbapenem Resistant Enterobacteriaceae (CRE)?

Enterobacteriaceae are a large family of bacteria that usually live harmlessly in the gut of all humans and animals. They are often referred to as 'coliforms'. However, these organisms are also some of the most common causes of opportunistic urinary tract infections, intra-abdominal and bloodstream infections. They include species such as *Escherichia coli*, *Klebsiella* spp. and *Enterobacter* spp. Carbapenems are a valuable family of antibiotics normally reserved for serious infections caused by drug-resistant Gram-negative bacteria (including Enterobacteriaceae). They include meropenem, ertapenem, imipenem and doripenem. Carbapenemases are enzymes that destroy carbapenem antibiotics, conferring resistance. They are made by a small but growing number of Enterobacteriaceae strains. There are different types of carbapenemases, of which KPC, OXA-48, NDM and VIM enzymes are currently the most common.

Carbapenem Resistant Enterobacteriaceae will be resistant to all penicillin and cephalosporin antibiotics. The bacteria will often be resistant to most other antibiotics. This severely limits the treatment options available if any of these bacteria cause an infection which requires antibiotic treatment.

Carbapenem Resistant Enterobacteriaceae may also be referred to as carbapenemase producing Enterobacteriaceae (CPE), carbapenem resistant organisms (CRO) or carbapenemase producing organisms (CPO). Although there are subtle differences between these categories, in this document CRE will cover all these groups of organisms.

In common with many bacteria, Carbapenem Resistant Enterobacteriaceae, if present on an individual, will exist harmlessly in the gut and stool. This is known as colonisation. When colonised patients are in hospital there is a risk that the organisms can be spread from one patient to another. Standard infection prevention and control measures should prevent this, but because of the significance of these organisms extra precautions are advised, as detailed in this policy.

Carbapenem Resistant Enterobacteriaceae are found in largest numbers in stool so diarrhoea represents the largest risk of transmission. But even in patients without diarrhoea the organisms will be found in smaller numbers on the skin and in the immediate environment of the patient.

In common with other antibiotic-resistant bacteria the numbers of Carbapenem Resistant Enterobacteriaceae will increase when patients are given antibiotics as normal, sensitive bacteria will be killed allowing the resistant organism to flourish. It has been shown that patients who had previously been identified as colonised with these organisms can test negative and then at a later date, especially if antibiotics have been administered, test positive.

Carbapenem Resistant Enterobacteriaceae are readily removed from the environment by normal cleaning and decontamination processes but because of the significance of this organism it is important that stringent application of these processes is carries out.

Carbapenem Resistant Enterobacteriaceae have been isolated from countries across the world. In some countries these organisms are frequently isolated and there is a significant impact on patient outcome. In the UK numbers are lower, but there has been a significant increase in the last few years. CRE have been found across the country. In some areas, such as SE and NW England they are a significant problem. There is evidence that by application of the infection prevention and control measures recommended by Public Health England and detailed in this policy that spread of these dangerous organisms can be limited.

Further information on Carbapenem Resistant Enterobacteriaceae can be found on the Public Health England website:

http://www.gov.uk/government/collections/carbapenem-resistance-guidance-data-and-analysis

3. Responsibilities

3.1 Role of the Chief Nurse

The Director or Nursing is responsible for:

- Acting as a second point of contact to support
- Ensuring that a replacement main contact is identified should the original author be re-deployed or leave the organisation

3.2 The Infection Prevention and Decontamination Group

- Monitoring compliance with the policy
- Ensuring that the policy is approved after review and prior to publishing

3.3 Ward/ Departmental Managers

Responsibility for implementation of this policy lies with the Senior Nurse (usually Ward Sister) or Departmental Manager in Charge of the areas to which these statements apply unless specifically stated otherwise in the text.

3.4 Infection Prevention and Control Team

The Infection Prevention and Control Team are responsible for providing support to managers in the implementation of this policy

3.5 Clinical Staff

It is the responsibility of all Trust Clinical Staff to follow the guidance contained in this Policy and report any problems with compliance to their line manager.

4. Contacting the Infection Prevention and Control Team

The Infection Prevention and Control Team can be contacted in hours on 01271 322680 (ext 2680 internal at North Devon District Hospital), via bleep 011 or out of hours by contacting the on-call Medical Microbiologist via North Devon District Hospital switchboard.

5. Management of CRE

5.1 Patient categories

Suspect case

A suspect case is defined as a patient who, in the last 12 months, has been

(a) an inpatient or received dialysis in a hospital abroad or

(b) an inpatient or received dialysis in a UK hospital outside the South West[1] or

(c) has had a possible CRE identified in a clinical sample

[1] The South West includes Devon, Cornwall, Somerset and Bristol. The Infection Prevention & Control Department will maintain a current list of areas at risk. But if there is ANY suspicion that the patient may be in any of the categories the patient should be managed as a suspected case initially. Restrictions can always be lifted at a later stage.

Contact case

A contact case is defined as a patient who has spent time in an open ward or bay with other patient(s) who have had a positive CRE result. These patients will be identified by the Infection Prevention and Control Team.

Confirmed case

These patients will have had a confirmed positive test for CRE in this Trust or elsewhere.

5.2 Screening

5.2.1 Who to screen

On admission to an in-patient bed ALL patients must be asked about their medical history and CRE status.

The following patients will be defined as a 'suspect case' and require screening:

Those who in the last 12 months, have been

(a) an inpatient or received dialysis in a hospital abroad or

(b) an inpatient or received dialysis in a UK hospital outside the South West[1] which has known problems with spread of Carbapenem Resistant Enterobacteriaceae

[1] The South West includes Devon, Cornwall, Somerset and Bristol. The Infection Prevention & Control Department will maintain a current list of areas at risk. But if there is ANY suspicion that the patient may be in any of the categories the patient should be managed as a suspected case initially. Restrictions can always be lifted at a later stage.

The following patients will be defined as a 'confirmed case' and require screening on admission:

These patients will have had a confirmed positive test for CRE in this Trust or elsewhere.

The Infection Prevention and Control team are responsible for identifying other patients requiring screening, for example contacts of positive cases.

5.2.2 How to screen

Give explanation and give relevant patient information to patient.

Take a rectal swab or a stool sample.

If a stool sample is not immediately available a rectal swab should be obtained to avoid delays

Swabs should be taken from any wounds.

If the patient is catheterised a catheter specimen of urine should be sent

Send to the microbiology laboratory indicating on the request form:

Sample type: Rectal swab or stool, as appropriate

Investigation: CRE screen

Clinical details: reason for screen, for example 'in hospital in London 2 months ago', 'contact as advised by IPC'

Screening of suspect patients: 3 screens 2 days apart on days 0, 2 & 4

Screening of contacts: 4 weekly screens, ie 7 days between each screen

5.3 How to take a rectal swab

A rectal swab is a specimen taken by gently inserting a charcoal 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 MUST have visible faecal material to enable organism detection in the laboratory. A rectal swab should not be mistaken for a perineal swab.

5.4 Laboratory

The microbiology laboratory has protocols in place to process CRE screens.

If a possible CRE is identified from a screen or clinical sample the laboratory will:

- Inform the consultant microbiologist
- Inform the Infection Prevention and Control team
- Refer the isolate to the reference laboratory for confirmation

If a possible CRE isolate is confirmed as CRE the laboratory will

- Inform the consultant microbiologist
- Inform the Infection Prevention and Control team

5.5 Isolation precautions for patients who are suspected or confirmed CRE colonised

Patients who are suspected or confirmed CRE colonised should be isolated for the duration of their hospital stay, unless advised otherwise by the IPCT. The patient should be advised of the reason for isolation and given the appropriate information leaflet.

The patient should be isolated in a single room with en-suite facilities. If this is not possible then the situation must be discussed with the IPCT.

Standard contact precautions MUST be practiced (whether the patient has infection or colonisation) as detailed in the Trust 'Patient Isolation and Staff Exclusion Policy'.

Particular emphasis should be placed on:

- good hand hygiene
- use of personal protective equipment in line with contact precautions
- equipment should be single patient use where possible e.g. blood pressure cuffs, stethoscopes, thermometers.
- cleaning and disinfection with 'Tristel' of any equipment that is removed from the room is required.
- routine cleaning of the single room with 'Tristel', it is important that hand contact areas are included
- if the patient requires a diagnostic test or procedure then ideally it should be undertaken in the patient's room (if appropriate or feasible). If not, it should be planned at the end of the day's list and the room, where the procedure was undertaken, and equipment 'Tristel' cleaned after use.
- where any part of a staff uniform, not protected by an ordinary 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
- patients' wounds should be covered where possible

5.5.1 Cleaning and decontamination

During patient stay:

Routine cleaning of the single room with 'Tristel', it is important that hand contact areas are included.

On patient discharge:

- A 'Tristel' clean is required.
  Scrupulous cleaning and disinfection of all surfaces is required with particular attention to those that may have had patient or staff hand contact
- Mattresses are of particular importance:
  conventional mattress covers should be cleaned and disinfected
  dynamic mattresses require a deep, internal clean. They should be disassembled, cleaned and disinfected as per trust guidance
- A curtain change is required
- Any unused wrapped single-use items in the patient's immediate vicinity should be discarded as they may have become contaminated by hand contact. The burden of this may be minimised by keeping limited stocks near the patient
- Any tubes of ointment and lubricant should be disposed of

5.5.2 Visitors

Visitors will be informed of any risks to their health prior to visiting.

Visitors must be advised to wash their hands with soap and water (always when leaving a room where a patient is in isolation with diarrhoea and/ or vomiting) or use alcohol gel on leaving the isolation room.

Visitors do not need to wear personal protective equipment, unless they are going to come into contact with blood, body fluids, or perform physical care.

5.6 Isolation of patients identified as contacts of CRE cases

The IPCT will advise of the precautions advised for these patients.

It is important that these patients are not transferred to other wards or healthcare facilities unless single room isolation is available. The IPCT should advise on any movement of these patients.

If the numbers are small and sufficient single rooms are available then single room isolation may be appropriate. If this is not feasible then cohorting of the patients in a bay may be considered.

5.7 Discharge of patients colonised with CRE

The patient and/or carers should:

- understand their current status (e.g. infection cleared but may still be a carrier), and the need for good hand hygiene
- understand that, should a close contact be admitted to hospital / healthcare setting for any reason, they need to inform healthcare staff of their exposure
- receive a patient information leaflet 1: **CRE:** Confirmed colonisation or infection

There is no reason to delay discharge to a patient's own home because of CRE colonisation.

If ambulance transport is used the ambulance service must be informed in advance.

The discharge summary to the GP must provide details of the CRE status

If the patient is transferred to another healthcare facility information about the CRE status must be provided. If the transfer is to a hospital of another trust the ward team should ensure that the Consultant Microbiologist at NDHT is aware so that detailed information about the CRE can be passed on to the receiving trust to assist in antimicrobial selection.

5.8 Discharge of patients suspected with CRE

Patients suspected of CRE colonisation should be managed as suspected until 3 negative screen results have been obtained.

If discharge is to take place whilst the patient is still in the suspected category then management should be in line with positive cases detailed above.

The IPCT should inform the GP and any receiving healthcare facility of any positive screening results that become available after the discharge of the patient.

If a patient who fulfils the criteria of a suspected case but had one or more negative screen results is readmitted then these negative screen should be ignored for the purposes of categorisation on admission, i.e. the patient would be classified as suspected.

The patient and/or carers should:

- understand their current status (e.g. suspected of CRE colonisation), and the need for good hand hygiene
- receive a patient information leaflet 2: **CRE:** Suspect colonisation or infection

There is no reason to delay discharge to a patient's own home because of CRE colonisation.

If ambulance transport is used the ambulance service must be informed in advance.

The discharge summary to the GP must provide details of the CRE status

If the patient is transferred to another healthcare facility information about the CRE status must be provided. If the transfer is to a hospital of another trust the ward team should ensure that the IPCT at NDHT is aware so that detailed information about their CRE status can be passed on to the receiving trust to assist in management.

5.9 Discharge of patients who are contacts of CRE

Patients who are contacts of CRE should be managed as such until 4 negative screen results have been obtained.

If discharge is to take place whilst the patient is still in the contact category then management should be as advised by the IPCT.

There is no reason to delay discharge to a patient's own home because of CRE contact. If discharge is to the patient's own home then no further screening is required.

The patient and/or carers should:

- understand their current status (e.g. suspected of CRE colonisation), and the need for good hand hygiene
- receive patient information leaflet 3: Contact with CRE

The IPCT should inform the GP and any receiving healthcare facility of any positive screening results that become available after the discharge of the patient.

If a patient who fulfils the criteria of a contact case but had one or more negative screen results is readmitted then the patient can be considered CRE negative unless any of the other admission criteria for a suspected case are met.

If ambulance transport is used the ambulance service must be informed in advance.

The discharge summary to the GP must provide details of the CRE status

If the patient is transferred to another healthcare facility information about the CRE status must be provided. If the transfer is to a hospital of another trust the ward team should ensure that the IPCT at NDHT is aware so that detailed information about their CRE status can be passed on to the receiving trust to assist in management.

5.10 Treatment of patients colonised or infected with CRE

5.10.1 Decolonisation

Decolonisation is NOT advised as it is not effective and may result in increased resistance

Patients should be advised of the need for good hand hygiene, especially if they develop loose stools or diarrhoea.

5.10.2 Treatment of infection

If infection is suspected:

Treatment should be on the advice of consultant microbiologists

Specimens should be taken so that causative organisms can be identified and susceptibility results are available to guide antibiotic choice

5.11 Community

Clients cared for in the community by Trust staff who are contacts, suspected or confirmed CRE do not need to be managed significantly differently to their other clients

Strict adherence to standard precautions is essential. As for in-patients where any part of a staff uniform, not protected by an ordinary 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.

5.12 Patient information

Patients who are screened or have a provisional or confirmed CRE should be given explanation and an appropriate leaflet.

5.13 Monitoring and Surveillance

If a patient is admitted with contact, suspect or confirmed CRE colonisation the admitting team should inform the Infection Prevention & Control Team.

The microbiology laboratory should inform the Infection Prevention & Control Team of any provisional or confirmed CRE isolates.

The Infection Prevention & Control Team will undertake alert organism surveillance for CRE. The IPCT will monitor numbers of cases weekly and make monthly reports to IPDG.

The IPCT will flag any confirmed CRE cases on the Patient Administration System and ensure the patient notes are flagged.

5.14 Actions to be taken on identification of a suspected, possible or confirmed CRE case is identified

Regardless of when the suspect, possible or confirmed case is identified; on admission or later:

The ward staff or microbiology laboratory, as appropriate, should inform the IPCT.

All relevant staff should be made aware that suspected, possible or confirmed case(s) of Carbapenem Resistant Enterobacteriaceae (CRE) colonisation or infection has / have been identified. These will include, as a minimum, the nursing, medical and Sodexo staff who work on the ward.

The patient's consultant should ensure that the medical team are aware.

The ward manager should ensure other staff on the ward are aware.

They will be reminded to ensure that:

All staff fully understand isolation procedures and adhere to contact (standard) precautions as a norm including:

- hand hygiene
- personal protective equipment

- aseptic technique
- laundry management
- safe use of sharps
- waste disposal (especially faeces)

Scrupulous IP&C practices are emphasised as being particularly important when using and caring for devices / equipment such as:

- intravenous / peripheral line
- central venous catheter line
- urinary catheter
- ventilators
- enteral feeding equipment
- colostomy or ileostomy
- any re-usable diagnostic equipment

As loose stools or diarrhoea (for any reason) increase the risk of spread of the bacteria from the gut, that it is especially important with these patients to:

- observe strict IP&C measures
- provide assistance where effective hand hygiene is in doubt

The IPCT will inform the following of a confirmed case by email:

- Ward manager
- Consultant of the patient
- Sodexo
- senior nurse for area
- lead clinician
- chief nurse
- medical director

The IPCT will undertake an immediate initial risk assessment to investigate the likely source(s). Any contacts will be identified and instructions given regarding screening and isolation or cohorting.

5.15 Actions if it is likely that secondary spread has occurred in NDHT

There are many possible scenarios where secondary spread of CRE could be suspected. In all instances the management will be guided by the IPCT. The local Health Protection Team of the PHE should be contacted by the IPCT for advice.

The most likely scenario is when a screened contact case is found to be suspected positive with the same organism as the index case. In this case it is likely that cohort restrictions should be applied to patients on the whole ward who will be screened. Consideration should be given to requesting screening on patients who have shared a bay with positive patients but have been discharged.

6. Monitoring Compliance with and the Effectiveness of the Policy

6.1 Standards/ Key Performance Indicators

Key performance indicators comprise:

That all patients meeting the criteria for patients suspected of colonisation with CRE are identified on admission

That no secondary cases of CRE colonisation are identified in NDHT

6.2 Process for Implementation and Monitoring Compliance and Effectiveness

After final approval, the author will arrange for a copy of the policy to be placed on the Trust's intranet. The policy will be referenced on the home page as a latest news release.

Information will also be included in the Chief Executive's Bulletin which is circulated electronically to all staff.

Line managers are responsible for ensuring this policy is implemented across their area of work.

Monitoring compliance with this policy will be the responsibility of the Infection Prevention and Control Team.

7. Equality Impact Assessment

Table 1: Equality impact Assessment

Group	Positive Impact	Negative Impact	No Impact	Comment
Age			X	
Disability			X	
Gender			X	
Gender Reassignment			X	
Human Rights (rights to privacy, dignity, liberty and non-degrading treatment), marriage and civil partnership			X	
Pregnancy			X	
Maternity and Breastfeeding			X	
Race (ethnic origin)				
Religion (or belief)			X	
Sexual Orientation			X	

8. References

Patient Isolation Policy

https://www.gov.uk/government/collections/carbapenem-resistance-guidance-data-and-analysis

https://www.gov.uk/government/publications/carbapenemase-producing-enterobacteriaceae-early-detection-management-and-control-toolkit-for-acute-trusts

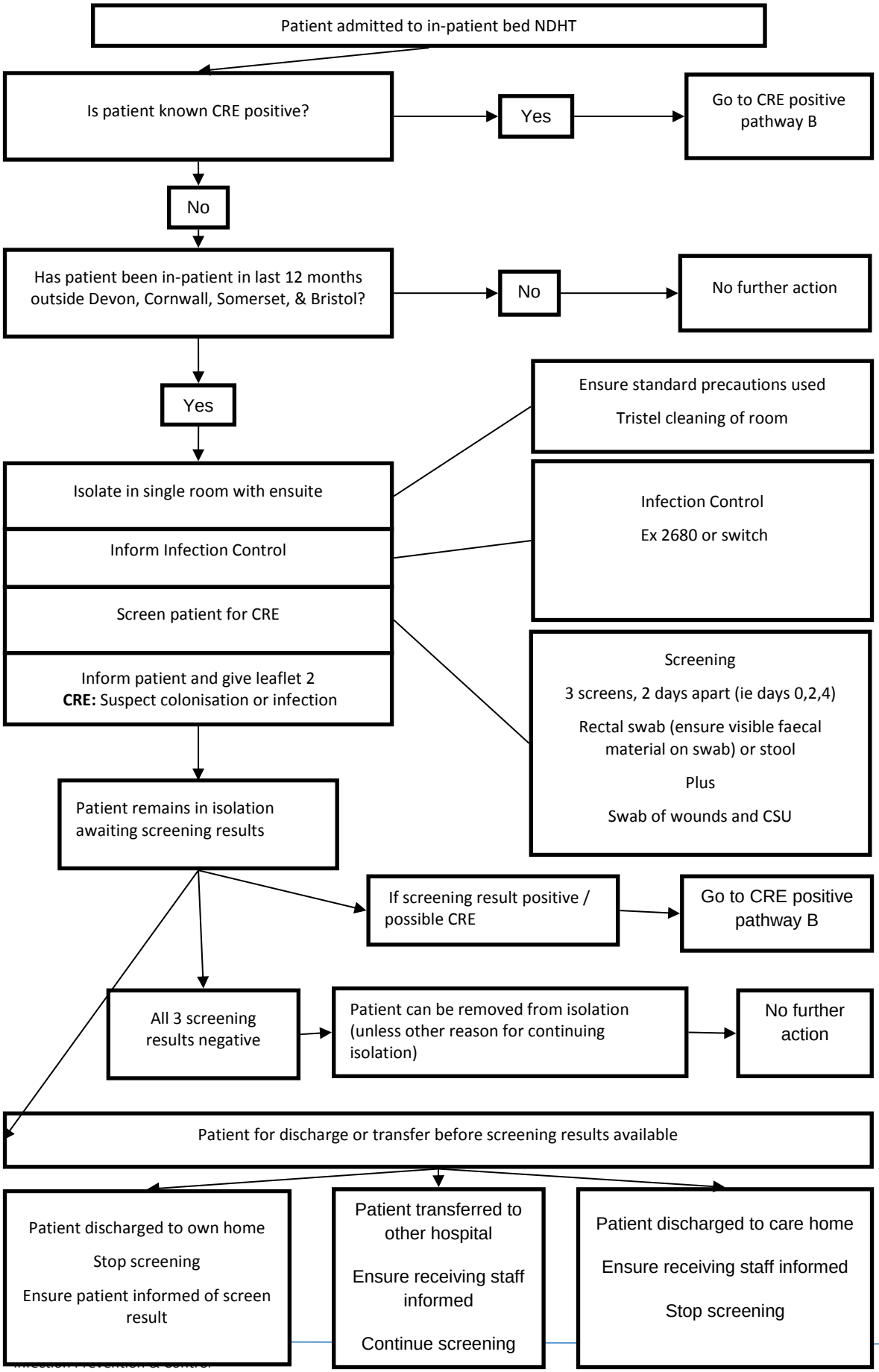
Toolkit for managing Carbapenemase-producing Enterobacteriaceae in non-acute and community settings. Public health England. Public Health England, June 2015

9. Associated Documentation

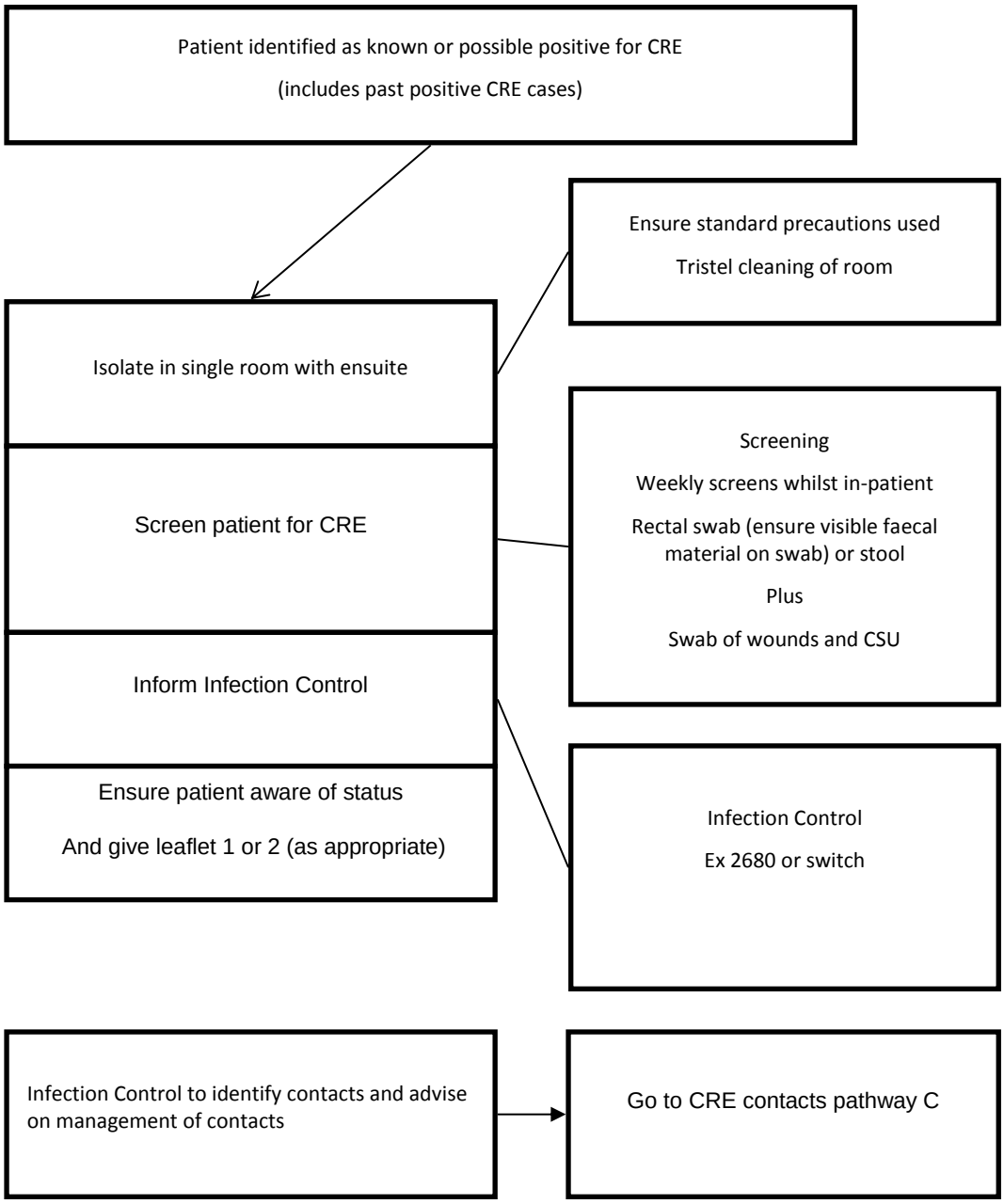
Patient information leaflets:
These leaflets are held on Trust intranet (BOB).

- **Leaflet 1: CRE:** Confirmed colonisation or infection
- **Leaflet 2: CRE:** Suspect colonisation or infection
- **Leaflet 3:** Contact with CRE

Annex A – Pathway A: all patients admitted to in-patient bed



Annex B - Pathway B: patients identified as confirmed or possible positive for CRE (includes past positive CRE cases)



Annex C - Pathway C: patients identified as contacts of CRE