UK Health Security Agency

Clostridioides difficile infection

How to deal with the problem

Interim update: April 2026

Contents

Introduction

This interim guidance supersedes the 2008 Health Protection Agency (HPA) and Department of Health '*Clostridium difficile* infection: How to deal with the problem' guidance.

This document has been produced to remove any outdated information from the 2008 guidance and provide links to newer guidance on the prevention and management of *Clostridioides difficile*, formerly *Clostridium difficile*, infection (CDI).

A review of CDI management and prevention, with an updated literature review and evidence synthesis, is in progress and new guidance will be published in 2027.

Who this guidance is for

This guidance, designed to reduce CDI, is aimed at a wide range of people, from 'board to ward' which includes health and social care professionals and managers in England involved in the prevention and control of CDI, including managing outbreaks.

For queries relating to this document, please contact: HCAIAMR.IOIG@ukhsa.gov.uk

2025 Expert review group

The UK Health Security Agency (UKHSA) convened an expert group which met in March 2025 to review the content of the 2008 guidance and update it to produce this document. Group membership and affiliations are available in the Acknowledgements.

Text from the 2008 guidance has been retained where the information is still relevant and/or provides important historical context. Where updates have been made to the text, this has been indicated. For example, includes the statement "[2025 expert review: retained with updated text]". Text that is out of date has been removed and relevant links to new and current standards provided.

No new advice or recommendations have been generated by literature review for this update.

This guidance should be read in conjunction with the National Infection Prevention and Control Manual for England (NIPCM).

What has changed

Changes to the previous version of the guidance include:

- *Clostridium difficile* replaced by *Clostridioides difficile* due to changes in bacterial taxonomy

- updated terminology as per the current health and social care system
- removal of out of date CDI surveillance data, the latest CDI data can be viewed on the UKHSA Clostridioides difficile: guidance, data and analysis webpage
- guidance on the management and treatment of CDI (former Chapter 3) has been superseded by the National Institute for Health and Care Excellence (NICE) guidance for Clostridioides difficile infection: antimicrobial prescribing [NG199], this chapter was withdrawn in 2024
- guidance on the prevention of CDI through antibiotic prescribing (formerly Chapter 4), which was withdrawn in 2024, has been superseded by the updated antimicrobial prescribing and stewardship principles in the following documents:
  - UKHSA - Antimicrobial stewardship: start smart then focus
  - NICE - Antimicrobial stewardship: systems and processes for effective antimicrobial medicine use
  - Department of Health and Social Care (DHSC) - Guidance for compliance with criterion 3: antimicrobial use in the Health and Social Care Act 2008: code of practice on the prevention and control of infections and related guidance
- removal of appendix: 'Treatments for CDI under investigation' which has been superseded by the NICE guidance for Clostridioides difficile infection: antimicrobial prescribing [NG199]
- removal of appendices: 'Accessing national microbiological services for strain typing' and 'Criteria for ribotyping isolates from the HPA *Clostridium difficile* Ribotyping Network for England (CDRN)' - updated information is available on the CDRN service website

Grading of recommendations

A simple grading system for the recommendations is given in Table 1. A grade of A, B or C appears in brackets after each recommendation. Grading has been removed for recommendations that were brought in line with new or current published standards as part of the 2025 review. Evidence from the 2008 guidance has not been regraded and is retained where relevant.

Table 1. Graded strength of evidence underlying the recommendations

Grade	Strength of evidence
Grade A	Strongly recommended and supported by systematic review of randomised controlled trials (RCTs) or individual RCTs
Grade B	Strongly recommended and supported by non-RCT studies and/or by clinical governance reports and/or the Code
Grade C	Recommended and supported by group consensus and/or strong theoretical rationale

The Code of Practice on the prevention and control of infection and related guidance

The Health and Social Care Act 2008: Code of Practice on the prevention and control of infections and related guidance recognises that good infection prevention and control (IPC), including cleanliness, is essential to ensure that people who use health and adult social care services receive safe and effective care.

By following the Code, registered providers can show that they meet the regulation on IPC (including cleanliness). The law states that the Code is to be considered by the Care Quality Commission (CQC) when it makes decisions about registration against the IPC requirements.

The Code of Practice sets out the 10 criteria against which a registered provider will be judged on how it complies with the registration requirements related to IPC (including cleanliness), as stated in the regulations. Not all criteria will apply to every regulated activity.

In relation to *Clostridioides difficile (C. difficile)*, the guidance states that NHS provider organisations should have a policy that makes provision for:

- surveillance of *C. difficile* infection
- diagnostic criteria
- isolation of infected service users and cohort nursing
- environmental decontamination
- antibiotic prescribing policies
- contraindication of anti-motility agents

The Code does not replace the requirement to comply with any other legislation that applies to health and social care services; for example, the Health and Safety at Work Act 1974 and the Control of Substances Hazardous to Health Regulations 2002.

The references to specific sections of the Code of Practice included within the recommendations in the 2008 publication have been removed from this interim guidance.

Approach to compiling the 2008 guidance

The 2008 guidance was based on a 1994 report produced by a working group established by the HPA's Steering Group on Healthcare Associated Infection. The guidance was derived from a review of the literature and expert opinion, and updated the extensive literature reviews of CDI carried out by:

- the National *C. difficile* Standards Group (2004)
- the joint review by the Healthcare Commission (HCC) and HPA (Health Protection Agency, 2006) of the epidemiology of CDI, and the survey of directors of infection prevention and control (DIPCs) (Health Protection Agency, 2006)

A formal systematic review with grading of the level of evidence provided by each study was not done. The working group did not consider that the evidence had changed sufficiently over the years to alter the 1994 report's main recommendations and did not warrant the extra time and resources needed for a full systematic review. Therefore, a simple grading system for the recommendations was provided (see Table 1. Grading of recommendations).

There were detailed recommendations throughout the document, with core recommendations for healthcare providers and commissioners highlighted as having the greatest impact in helping management address the problem of CDI.

An extensive description of the pathogenesis of CDI was not included in the 2008 guidance as it was covered by both the National *Clostridium difficile* Standards Group (2004) and the HCC/HPA (Health Protection Agency, 2006) reviews. However, key elements to note are:

- antibiotics disturb the normal gut flora, some more than others
- the spores of *C. difficile* are the transmissible form and contaminate the environment, where they survive for long periods
- the ingested spores germinate in the disturbed gut
- the *C. difficile* bacteria produce 2 principal toxins – A and B – which cause diarrhoea and colitis
- the attack rate is variable (greater in older patients), complicating our understanding of the epidemiology of outbreaks

The clinical presentation ranges from mild diarrhoea to severe colitis with dehydration, pseudomembranous colitis, megacolon and perforation.

The 2008 guidance drew on the HCC reports into the CDI outbreaks at Stoke Mandeville Hospital, (Buckinghamshire Hospitals NHS Trust), the University Hospitals of Leicester NHS Trust and the Maidstone and Tunbridge Wells NHS Trust (Commission for Healthcare Audit and Inspection, 2006; Healthcare Commission, 2007b, c), and the joint HCC HPA review (Health Protection Agency, 2006) which concluded that the 1994 guidelines "may not have been sufficiently prescriptive in their requirements to implement verified prevention and control practices".

Therefore the 2008 guidance built on the recommendations made in 1994, guided by the following 3 principles:

- "CDI should be managed as a diagnosis in its own right" (Healthcare Commission, 2007b)
- "the safety of patients cannot be compromised" but is "at the centre of everything we do" and cannot be compromised by other strategic or financial objectives (Commission for Healthcare Audit and Inspection, 2006; Healthcare Commission, 2007a)

- Infection prevention and control, including CDI, is “everybody’s business” (Committee on Public Accounts, 2000; Healthcare Commission, 2007a), requiring not only a ‘board to ward’ approach in the hospital but active engagement of primary care trusts (now integrated care boards (ICBs)), health protection units (HPUs, now health protection teams (HPTs)) and strategic health authorities (now ICBs), using the rubric of clinical and corporate governance - the Operating Framework for the NHS in England 2008/09 (Department of Health, 2007a) and the Code also make it clear that the Department of Health expects the NHS to implement effective infection prevention and control policies and procedures from board to ward

Adopting these principles made individual healthcare professionals responsible for initiating early diagnosis and prompt isolation, and for compliance with guidelines for hand hygiene, antibiotic prescribing, and wearing disposable gloves and aprons. It put the onus on trust management and ICBs to ensure that isolation facilities match demand; that resources were made available for antimicrobial stewardship teams (AMS teams), surveillance, audit, rapid diagnosis, environmental cleaning and education; that there were collaborative links with HPTs; and that patients and the public were kept informed proactively of policies and practice, as appropriate. These requirements still stand in this interim update.

Summary of recommendations

C. difficile infection causes serious illness and outbreaks among patients in hospital and in the community. Normally it affects patients with comorbidities and chronic illness, including the immunosuppressed and patients who have had antibiotic treatment.

It is important that when a patient presents with diarrhoea, the possibility that it may have an infectious cause is considered. Patients with potentially infectious diarrhoea should be isolated before a definitive diagnosis is made.

We draw attention to 8 core recommendations for healthcare providers and commissioners. Following these, from board to ward, will reduce cases of CDI.

Core recommendations

1. Clinicians (doctors, nurses and other healthcare professionals who diagnose and manage illness) should apply the following mnemonic protocol (SIGHT) when managing suspected potentially infectious diarrhoea:

S	Suspect that a case may be infective where there is no clear alternative cause for diarrhoea
I	Isolate the patient and consult with the infection prevention and control team (IPCT) while determining the cause of the diarrhoea
G	Gloves and aprons must be used for all contacts with the patient and their environment
H	Hand washing with soap and water should be carried out before and after each contact with the patient and the patient's environment
T	Test the stool for toxin, by sending a specimen immediately

[2025 expert review: retained with updated text.]

2. Clinicians should consider CDI as a specific diagnosis, grading each confirmed case for severity, treating accordingly and reviewing each patient daily, monitoring bowel function using the Bristol Stool Chart (Appendix 1). Integrated care systems should ensure that trusts establish a multidisciplinary clinical review team consisting of a medical microbiologist, infectious disease or IPC doctor, IPC practitioner, and pharmacist. A gastroenterologist, surgeon, and/or dietician may also be required. The team should be available to review CDI patients when clinically indicated (see NICE guidance for Clostridioides difficile infection: antimicrobial prescribing [NG199]). Patients with CDI should be reviewed regularly by members of the team to ensure that the infection is optimally treated, and the patient is receiving all necessary supportive care. [2025 expert review: retained with updated text.]

3. Trusts should provide sufficient capacity to isolate or cohort all known CDI patients. For example, in cases where single-room isolation or cohorting is not halting the spread of

infection, and the advice of the IPCT is to open or create a designated isolation ward, this should be done, taking external advice from the local HPT if necessary. Isolation beds that are not in single rooms may be termed as cohort beds/wards. It is strongly recommended that patients in whom the cause of diarrhoea has not been determined should be isolated in a single room pending diagnosis. If CDI is confirmed, they may be nursed in a cohort ward if one is available. If a large point source outbreak of diarrhoea occurs such that there are insufficient single rooms for every affected patient, the closing of bays or wards to admissions should be considered. [2025 expert review: retained with updated text.]

4. In England, registered healthcare organisations are required to provide evidence of prudent prescribing and AMS as a standard of compliance; as stated in the Health and Social Care Act 2008: Code of Practice on the prevention and control of infections. It is recommended that organisations establish an AMS programme. Further information can be found at Antimicrobial stewardship: start smart then focus and Antimicrobial stewardship: systems and processes for effective antimicrobial medicine use guidance [NG15]. [2025 expert review: retained with updated text.]

5. Broad-spectrum antimicrobials (including cephalosporins, fluoroquinolones, co-amoxiclav, piperacillin-tazobactam, carbapenems and clindamycin) have been most strongly associated with CDI, but all antimicrobials should be avoided unless there are clear clinical indications for their use. Antimicrobials should be used for the shortest duration possible that results in a successful clinical outcome. They should also be managed within a multifactorial programme (including IPC precautions) aimed at reducing healthcare-associated infections (HCAIs) and minimising the risk of antimicrobial resistance. [2025 expert review: retained with updated text in line with UKHSA's Antimicrobial stewardship: start smart then focus toolkit and the Health and Social Care Act 2008: Code of Practice on the prevention and control of infections and related guidance.]

6. Organisations should ensure, through their governance processes, that systems are in place locally to monitor and audit IPC practice (such as link champions, Clinical Lead roles, and audit or quality improvement processes). [2025 expert review: retained with updated text.]

7. Trusts should ensure that all clinical areas are assessed for cleanliness and have introduced the National standards of healthcare cleanliness 2025. [2025 expert review: retained with updated text.]

8. Trusts should support the control and reduction of CDI from board level downwards, prioritising the management of risk to patients and ensuring that the safety of patients is not compromised by the pursuit of other strategic objectives. They should assess the performance of all wards and departments through regular audit and feedback so that activity at a ward level is appropriate and consistent with trust and national policy. Mandatory IPC training is a requirement for health and care staff. This training ensures staff have the knowledge and skills to prevent the spread of infections in health and care settings. [2025 expert review: retained with updated text.]

Guidance

1. Clinical definitions and laboratory diagnosis

Case and outbreak definitions

To help in identifying and managing incidents of CDI, the following definitions are recommended, which are modified from examples provided in the literature (Department of Health, 1994; Jernigan and others, 1998; Lee, 2006; Healthcare Commission, 2006a; Musher and others, 2006):

- *C. difficile* infection: one episode of diarrhoea, defined either as stool loose enough to take the shape of a container used to sample it or as Bristol Stool Chart types 5 to 7 (Appendix 1), that is not attributable to any other cause, including medicines (Appendix 2), and that occurs at the same time as a positive toxin assay (with or without a positive *C. difficile* culture) and/or endoscopic evidence of pseudomembranous colitis
- a period of increased incidence (PII) of CDI: 2 or more new cases (occurring more than 48 hours post-admission, not relapses) in a 28-day period in the same location, such as a hospital ward
- an outbreak of CDI: 2 or more cases caused by the same strain related in time and place over a defined period that is based on the date of onset of the first case

The incidence of CDI may differ markedly from one hospital to another. Trusts should actively manage levels of CDI, whether there is an outbreak against a background of low incidence or there is hyperendemic CDI. It is not acceptable for trusts with many CDI cases to set a high threshold for response. [2025 expert review: retained with updated text.]

It is also important to be aware of the 'background rate' of diarrhoea in each ward, particularly wards with elderly patients, since loose stools are common in this group. An annual rate of 30 to 35% for episodes among residents in nursing and care homes has been observed (Department of Health, 1994; Musher and others, 2007). IPCTs should take a measured approach when assessing potential outbreaks of CDI. Apparent increases in cases may be influenced by factors such as improved case ascertainment, heightened clinical awareness, or changes in patient population (for example more high-risk admissions). These may result in clusters or pseudo-outbreaks that do not reflect true transmission events. Outbreak declaration should be based on local surveillance data, epidemiological investigation, and in accordance with current guidelines. [2025 expert review: retained with updated text.]

Anecdotal and published evidence shows that during outbreaks of viral gastroenteritis, such as norovirus infection, there may be an associated rise in CDI. This partly explains the highly significant increase in numbers of faecal sample submissions when wards are closed as the outbreak of viral gastroenteritis is managed (Wilcox and Fawley, 2007). However, CDI should be actively excluded in all cases of diarrhoeal illness, otherwise outbreaks of CDI may be missed.

Laboratory diagnosis

[2025 expert review: content superseded by UK Standards for Microbiology Investigation B 10 - Investigation of faecal specimens for Clostridioides difficile and the CDRN: guide to services.]

Recommendations

1.1 The IPCT should:

- adhere to the case and outbreak definitions in this guidance for use in identifying and managing incidents of CDI
- draw up comprehensive local guidelines for the diagnosis and management of CDI, including PII (see recommendation 2.5) and outbreaks (see Chapter 6. Coping with high prevalence) (Grade C)

1.2 As speed of diagnosis is important for the efficient use of isolation facilities, clinicians should, in line with the SIGHT protocol, ensure that stool specimens are sent for toxin testing as soon as infective diarrhoea is suspected. (Grade B)

S	Suspect that a case may be infective where there is no clear alternative cause for diarrhoea (Grade B)
I	Isolate the patient and consult with the IPCT while determining the cause of the diarrhoea (Grade B)
G	Gloves and aprons must be used for all contacts with the patient and their environment (Grade B)
H	Hand washing with soap and water should be carried out before and after each contact with the patient and the patient's environment (Grade A)
T	Test the stool for toxin, by sending a specimen immediately (Grade B)

2. Surveillance

Evidence base

Surveillance is ‘information for action’. It provides information for:

- early recognition of changes in patterns of infection against the baseline
- identifying the size of the problem
- monitoring trends and comparing rates
- evaluating the effectiveness of interventions
- identifying areas for further investigation or research
- reinforcing good practice
- influencing key hospital staff and decision-makers

Surveillance, especially when accompanied by feedback to clinicians, has long been established as an effective tool to lower healthcare-associated infections (Haley and others, 1985).

This has been shown to be true for CDI in individual studies (Stone and others, 2000; Fowler and others, 2007). Furthermore, the HCC report on HCAIs found that trusts that widely disseminated and fed back the results of CDI surveillance had lower rates of CDI (Healthcare Commission, 2007a).

National policy

Surveillance of CDI in England has been built on traditional laboratory reporting of cases of CDI since 1990, but concerns about rates of HCAI resulted, in 2004, in surveillance of CDI being included in the Government’s mandatory programme for the surveillance of HCAI. This comprised quarterly reporting by NHS acute trusts of all cases of CDI in patients aged 65 years and over that were diagnosed in the trust’s laboratories, wherever the infection was acquired.

Cases were defined as all diarrhoeal specimens that test positive for *C. difficile* toxin where the patient has not been diagnosed with CDI in the preceding 4 weeks. The criteria for testing for infection and reporting cases were defined by the National *Clostridium difficile* Standards Group (National *Clostridium difficile* Standards Group, 2004). The mandatory surveillance also included investigation of a sample of isolates from trust hospitals for a defined period in accordance with a random sampling programme. This was to obtain information on prevalent epidemiological types and susceptibilities, given that few isolates were being referred to the National Reference Laboratory.

To have better and more informed monitoring of the progress towards meeting local targets, in April 2007 the Department of Health required changes to the CDI surveillance system. This

included the establishment of web-based reporting for individual cases of infection and extension of the dataset to include patients aged 2 years and older. This policy was restated in a letter in January 2008 from the Chief Medical Officer and Chief Nursing Officer, together with restoration of the use of a 28-day de-duplication interval (Chief Medical Officer and Chief Nursing Officer, 2008).

The national CDI surveillance system has the following components:

- mandatory surveillance of all cases diagnosed in patients aged over 2 years that have been reported individually to a national web-enabled surveillance system (trust-based)
- quarterly mandatory laboratory returns (QMLR) and sampling data
- voluntary laboratory reporting of cases (laboratory-based) (second generation surveillance system, SGSS)

[2025 expert review: retained with updated text.]

All the above components should contribute to an understanding of the local, regional and national trends and the epidemiology of CDI. Information from these surveillance schemes is key to identifying changing trends against earlier baselines and the occurrence and extent of hospital outbreaks or hyperendemicity. Recognising ward, unit or hospital increases in the number of infected patients against a baseline is the key factor in initiating local outbreak control measures. This includes the reporting of outbreaks to those responsible for performance management, public health and commissioning services such as trust boards, UKHSA HPTs and ICBs. [2025 expert review: retained with updated text.]

Use of statistical tools such as statistical process control (SPC) charts may help IPCTs to distinguish between natural and unexpected variation and to identify when numbers of cases are exceeding normal expectations for that unit (Gustafson, 2000). However, SPC limits should be regularly reviewed and adjusted in line with control targets, as levels of CDI need to be managed whether there is an outbreak against a background of low incidence or whether there is hyperendemic CDI.

There has been criticism that SPCs may not be as appropriate for biological systems as they are for manufacturing systems. Risk-adjusted charts that use the standardised infection ratio have performed better than simple charts in identifying episodes of HCAI (Gustafson, 2000). Care should be taken when using SPCs for surveillance of low case numbers or rates. [2025 expert review: retained with updated text.]

In terms of information for action at the local level, core components of the dataset should include:

- patient, laboratory, unit/ward and hospital identifiers
- patient demographics

- date of hospital admission and any discharges from the reporting trust in the previous 84 days
- date of onset of infection
- date when the specimen was taken
- where the infection was diagnosed (such as hospital, community, speciality)
- whether the infection was part of an outbreak

[2025 expert review: retained with updated text.]

Other desirable items include:

- the primary diagnosis
- an assessment of the severity of prior and current (at diagnosis) underlying illnesses
- antimicrobial therapy at time of specimen collection and in the prior 7 days
- total number of stool specimens processed by the laboratory against those tested for *C. difficile*
- possible risk factors for infection
- patient outcomes including death within 30 days of diagnosis

[2025 expert review: retained with updated text.]

It is not always possible to determine whether a CDI was acquired in the community or in hospital, or when it was acquired, but the place of onset of symptoms of CDI should be identified and reporting on attribution of onset is explained at UKHSA HCAI Data Capture System. [2025 expert review: retained with updated text.]

Interpretation of the overall national picture is affected by complex biases in how CDI is identified. There is much local variation in testing as CDI is not yet routinely considered in the diagnosis of all cases of diarrhoea. Further information on test performance characteristics can be found in the Standard for Microbiological Investigations (SMI) B 10 - Investigation of faecal specimens for *Clostridioides difficile*. [2025 expert review: retained with updated text.]

This variation means that the interpretation of local surveillance and comparing local results with the national dataset is complex in terms of:

- the factors affecting CDI ascertainment
- the wide variation in numbers and rates in the different types of acute care facility
- the extent that investigation of diarrhoea in all age groups, within the acute healthcare setting and in the community, is shaped by clinical suspicion and local practice (rather than any systematic epidemiological criteria)

It is important to catch information that gives early warning of changes in the epidemiology of *C. difficile*, such as trends in community-acquired disease, overall mortality, severity and strain type. Data on death and severity should also be collected. There is a requirement to report outbreaks to external agencies. [2025 expert review: retained with updated text.]

Further information on the current system for surveillance of CDI in England can be found at UKHSA HCAI Data Capture System and the NHS Standard Contract: Minimising Clostridioides difficile and gram-negative bloodstream infections. The most up-to-date official statistics concerning CDI case numbers can be found in the UKHSA MRSA, MSSA and Gram-negative bacteraemia and CDI: Annual epidemiological commentary. [2025 expert review: content updated to link to the current system.]

Recommendations

2.1 All NHS trusts and laboratories in England are required to participate in the national mandatory surveillance of *C. difficile*. CDI immunoassay positive diarrhoea (by 2-stage testing) should be reported in patients over 2 years of age. [2025 expert review: retained with updated text. Reporting criteria superseded by the UKHSA HCAI Data Capture System.]

2.2 Trusts should be strict in adhering to the criteria for testing and reporting. Only diarrhoea samples should be tested. (Grade B)

2.3 Ideally, all patients aged 2 years old and above with diarrhoea, that is not attributable to an underlying condition such as inflammatory colitis or therapy such as laxatives, will be tested f*or C. difficile*.

However, acknowledging the variation in laboratory context such as regional epidemiological data, a local decision should be made in liaison with relevant stakeholders, including health authorities and commissioning bodies as to who should be tested. This decision should also consider the impact on end users, including clinical and public health professionals and patients.

As a minimum, the following patients should be tested:

- all hospital patients aged 2 years old and above
- all community patients aged 65 years old and above
- community patients under 65 years old when specifically requested and in situations specific to the following, but not limited to them:
  - if *C. difficile* is mentioned in request clinical details
  - if the patient is recognised by the testing laboratory, microbiologists or IPC team as previously having *C. difficile*
  - if current or prior antibiotic therapy is mentioned
  - if a hospital admission is mentioned
  - if residence at a care home or other community care facility is indicated by the patient address, or mentioned on the request form
  - immunocompromised (for example, transplant patients, patients on chemotherapy)
  - inflammatory bowel disease (IBD, such as Crohn’s disease or Ulcerative Colitis)
  - recent abdominal surgery

- chronic renal/kidney disease (CKD)
- if clinical details indicate patient has been prescribed a proton pump inhibitor (PPI; such as lansoprazole, omeprazole)

Note: CDI is not confined to the groups above and may not have been considered by the requestor. Half of community CDI cases may be undetected because of absence of clinical suspicion, accounting for 3 times more undiagnosed adults in the community compared with hospitals in one study. [2025 expert review: retained with updated text to reflect changes in SMI B 10 - Investigation of faecal specimens for Clostridioides difficile.]

2.4 There should be continuous local surveillance of cases of CDI:

- Hospitals or trusts should record and report each month all cases (in all age groups) to directorates, wards and units, with analysis of trends and exceptional events. Review of these reports should be a standing item on the agenda for directorate meetings, for example.
- Quarterly, or more frequent, reports of CDI should be returned to IPCTs and those accountable for HCAI in specific areas or units, as well as being a standing item on the agenda of IPC committee meetings and board meetings. Organisations and responsibilities have changed since the 'How to deal with the problem' guidance first came out and there should be oversight and involvement by those responsible for commissioning services, for example, hospital trusts, ICBs, responsible bodies.

[2025 expert review: retained with updated text.]

2.5 Trusts should adhere to the standard definitions of a PII and outbreak (see Chapter 1: Clinical definitions and laboratory diagnosis). The following actions are to be taken if a PII is identified in the same location, for example, hospital ward (see Figure 1):

a) urgently inform the clinical director, matron, ward manager and directorate manager
b) conduct regular ward audits. As a minimum, this should include hand hygiene, the ward environment, antibiotic prescribing, commode audits and transmission-based precautions audits. The NIPCM has a number of audit tools. These tools should be used to identify where IPC practice requires improvement. The frequency of audits is for local determination. Feed the audit results back to the matron or ward manager, as well a ward/unit staff. The results can be used to compare practice over time
c) clean the whole ward with a sporicidal agent for example, a chlorine-containing agent at adequate concentrations and contact time, until no further symptomatic patients are present on the ward. Emphasise that each bed space needs to be cleaned separately with separate cloths. Enhanced cleaning (as defined in the NIPCM) should be done as required
d) use UKHSA CDRN to undertake PCR ribotyping from all *C. difficile* positive faecal specimens from patients in the ward as per CDRN guidance. Do not wait for results from the CDRN before implementing investigation and control

measures. Further, typing should not influence initial measures for managing infected patients and preventing transmission, but it will provide an understanding of the epidemiology of any apparent increase in cases

e) the IPCT should carry out an automatic review of ward PIIs each week

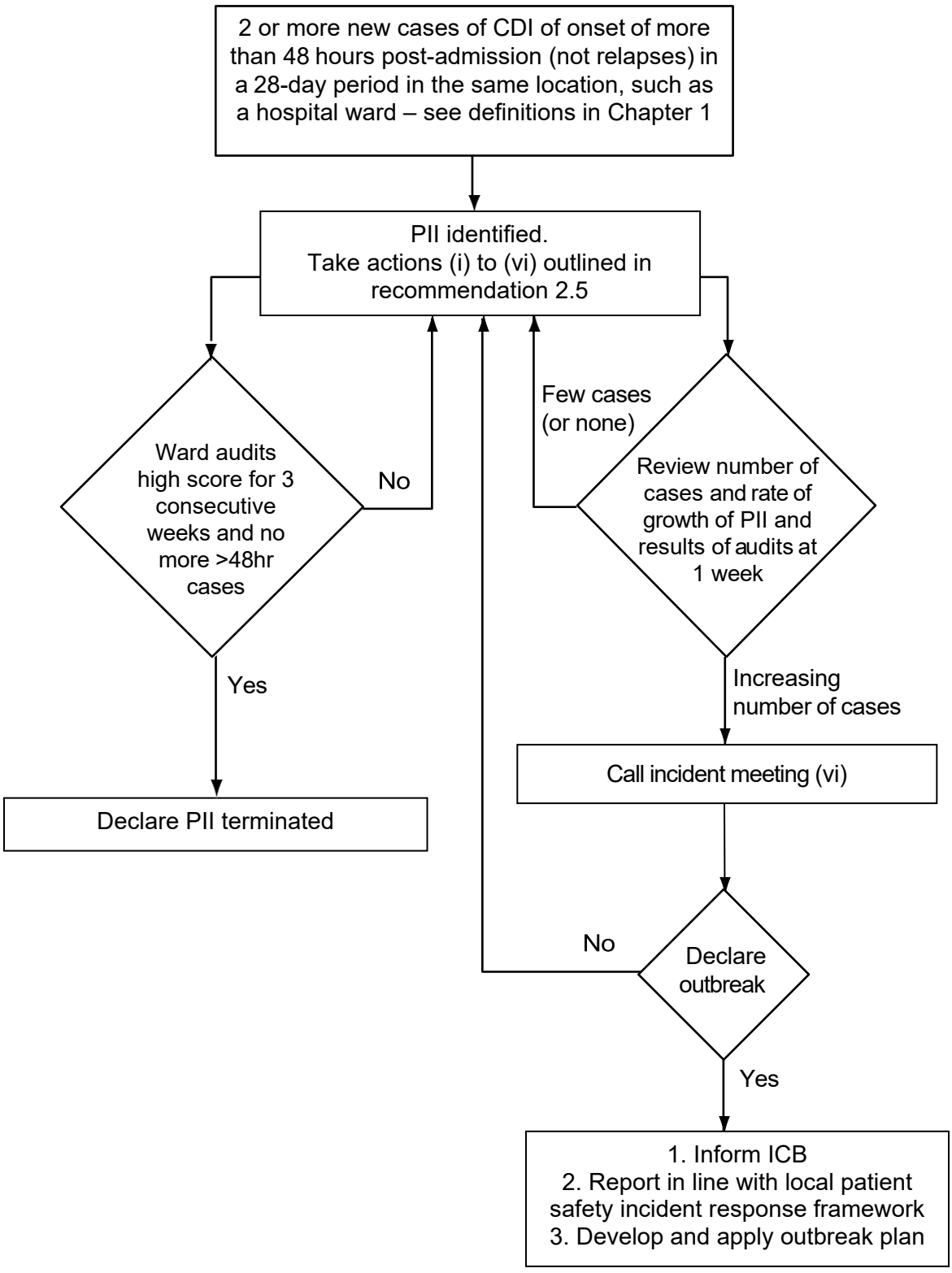
f) an incident meeting should be held as determined by the size and rate of growth of the PII by assessment of the situation by the DIPC and/or the duty infectious disease or microbiology consultant with the clinical director and consultants, depending on the number of cases

[2025 expert review: retained with updated text.]

2.6 Trusts should report all outbreaks to those responsible for performance management, public health, and commissioning services such as trust boards, UKHSA HPTs, and ICBs. Outbreaks meeting the criteria for a patient safety incident should be reviewed in line with the organisation's Patient Safety Incident Response Framework (PSIRF), with consideration given to whether a Patient Safety Incident Investigation (PSII) is required, in accordance with NHS guidance. This includes all ward closures that are due to diarrhoea shown to be associated with *C. difficile*. 2025 expert review: retained with updated text to reflect the NHS England Patient Safety Incident Response Framework and the CQC Infection prevention and control assessment framework.]

2.7 Local surveillance should include the number of patients with severe infection, the number requiring surgery and the number dying, where CDI caused or contributed to the death. A regular review should be conducted of deaths within 30 days of diagnosis of CDI to ensure that a common standard of assessment of cause of death or contribution to death is being applied. [2025 expert review: retained with updated text.]

Figure 1. Algorithm for the management of PII and outbreaks of CDI, to be used together with recommendation 2.5. [2025 expert review: retained with updated text]



3. Prevention through isolation

Evidence base

The National *Clostridium difficile* Standards Group examined individual studies to assess the impact of isolation of patients with CDI. The evidence from these studies, where isolation was either the main intervention, or part of a package of interventions, indicates that early isolation helps to both control outbreaks and reduce endemic levels of CDI (National *Clostridium difficile* Standards Group, 2004).

Although such studies share the weaknesses of infection control studies in general (Stone and others, 2007a, b), RCTs may be neither feasible nor ethical. [2025 expert review: retained with updated text.]

Evidence was also found for the effectiveness of isolation wards, isolation in single rooms, and isolation measures with cohorting of nursing staff. Given that *C. difficile* is an infectious disease with very high levels of hand and environmental contamination but not staff carriage, as with Methicillin-resistant Staphylococcus aureus (MRSA), we consider it highly likely that isolation of suspected and proven cases is effective. [2025 expert review: retained with updated text.]

National policy

It is recommended that symptomatic patients (including patients with diarrhoea who have not yet been confirmed as C. *difficile*-positive) should be managed in single rooms. Symptomatic CDI patients should usually remain source isolated at least until formed stools have been obtained, whether they remain toxin or culture positive or negative. It is worth noting that, for some patients, resolution of symptoms to baseline may not result in formed stools, for example, if the patient has an alternative cause of chronic diarrhoea. [2025 expert review: retained with updated text to reflect the latest advice in the NIPCM.]

In a large outbreak it may not be possible to isolate affected patients in single rooms and it may be necessary to cohort patients in a dedicated area. Clinical assessment is recommended for each patient to assess suitability for a cohort facility based on their care requirements. Negative-pressure ventilation is not required for CDI patients in isolation wards or single rooms. [2025 expert review: retained with updated text to reflect the latest advice in the NIPCM.]

Healthcare Commission investigation

The HCC's investigations into the outbreaks at Stoke Mandeville (Commission for Healthcare Audit and Inspection, 2006) and Maidstone (Healthcare Commission, 2007b) highlight lessons for other trusts.

Chief among these is the need for rapid isolation of patients with diarrhoea as well as restriction of the movement of infected patients between wards. The HCC "prioritises the management of patient risk" and is unequivocal in "reiterating to NHS Boards that the safety of patients is not to be compromised under any circumstances".

The HCC report stated that trusts need to ensure that the safety of patients is not compromised in the pursuit of other strategic objectives, such as financial and other targets and service reconfigurations. It specifically criticised the Stoke Mandeville and Maidstone boards for not immediately following the advice of the IPCTs and HPTs to open an isolation ward with self-contained toilet facilities, when isolation capacity in the hospitals was exceeded.

Examples of good practice

C. difficile isolation wards set up at Stoke Mandeville Hospital and Royal Devon and Exeter Hospital were associated with a decline in the incidence of *C. difficile* in these hospitals.

Strict criteria for de-isolation were introduced at Stoke Mandeville Hospital, and these also helped. [2025 expert review: retained with updated text.]

Recommendations

3.1 Patients with potentially infectious diarrhoea (at least one episode) should be moved immediately into a single room with a self-contained toilet and handwash basin. Stool specimens should be sent immediately for *C. difficile* testing (for more information see SIGHT protocol). If the room does not have its own toilet facilities, then a dedicated commode should be arranged. Close attention is required for correct decontamination of all equipment and to prevent dissemination of CDI into the ward environment or dirty utility. [2025 expert review: retained with updated text.]

3.2 The Bristol Stool Chart should be used to monitor the patient's diarrhoea after each bowel movement. If the patient's bowels have not opened, this should be documented at the end of each shift. Versions are available for both adults and paediatric patients (see Appendix 1). [2025 expert review: retained with updated text.]

3.3 All staff entering an isolation room or area should follow transmission-based precautions for CDI and use disposable gloves and aprons for all contact with the patient and the patient's environment. Staff should wash their hands with soap and water before entering and after leaving the patient environment (see SIGHT protocol). [2025 expert review: retained with updated text to reflect the latest advice in the NIPCM.]

3.4 Visitors should be provided with information on CDI and advised to wash their hands with soap and water before entering and after leaving the patient environment. If providing

personal care, the use of gloves and aprons is advised. [2025 expert review: retain with updated text to reflect the latest advice in the NIPCM.]

3.5 The patient should remain isolated until there has been no diarrhoea (types 5 to 7 on the Bristol Stool Chart) for at least 48 hours, and a formed stool has been achieved (types 1 to 4), or until bowel habit has returned to baseline. It is worth noting that, for some patients, resolution of symptoms to baseline may not result in formed stools, for example, if the patient has an alternative cause of chronic diarrhoea. [2025 expert review: retained with updated text.]

3.6 If isolation in a single room is not possible due to high prevalence, see 'Chapter 6: Coping with high prevalence'. [2025 expert review: superseded by updated content in this guidance.]

3.7 Where single-room isolation or cohort nursing in a bay is not halting or reducing spread of infection and the advice of the IPCT is to open or create a designated isolation ward, this should be done. If necessary, take external advice from UKHSA. (Grade B)

3.8 Confirmed cases, who are not already isolated, should be transferred to a single room or isolation ward as soon as possible after diagnosis and no later than the end of the day of diagnosis. An audit should be done of the number of patients isolated and the percentage of suspected and confirmed cases isolated during the working day. Minimising the movement of patients between wards will reduce the exposure of other patients to *C. difficile* when a case of CDI is recognised. [2025 expert review: retained with updated text.]

3.9 Transfer and movement of patients should be reduced to an operationally effective minimum. Where patients need to attend departments for essential investigations, a clinical risk assessment is recommended to minimise the risk of CDI transmission. Where patients need to attend departments for essential investigations, they should be 'last on the list' unless earlier investigation is clinically indicated. In advance of the transfer, the receiving area should be notified of the patient's CDI status. Arrangements should be put in place to minimise the patient's waiting time and hence contact with other patients. Transfer to other healthcare facilities should include notification of the patient's CDI status and be appropriate, for example the patient should be called for when the facility is ready for them and their transfer planned so that they are not held in communal waiting areas. Staff, including ambulance personnel, should adopt IPC precautions when in contact with the patient. [2025 expert review: retained with updated text.]

3.10 After transport of the patient with CDI, ensure high standards of IPC practices are maintained including effective cleaning using sporicidal agents as per manufacturers' instructions. [2025 expert review: retained with updated text to reflect the latest advice on terminal cleaning in the NIPCM and the National standards of healthcare cleanliness 2025.]

3.11 All clinical waste and linen from patients with CDI, including bedding and adjacent curtains, should be considered as contaminated and should be managed in accordance with local and national guidance. Healthcare laundry must be managed and segregated in accordance with Health Technical Memorandum 01-04: Decontamination of linen for health and social care and Health Technical Memorandum 07-01: Safe and sustainable management of healthcare waste. [2025 expert review: retained with updated text.]

3.12 IPC precautions for handling deceased patients are the same as those used when the patient is alive. Faecal soiling around the cadaver should be cleaned first with detergent and then with a sporicidal cleaning agent. Body bags are not required but may be used as part of general practice in accordance with standard precautions for all patients. There is negligible risk to mortuary staff or undertakers provided that standard IPC precautions are used. [2025 expert review: retained with updated text to reflect the latest advice in the NIPCM.]

4. Prevention through environmental cleaning and disinfection

Evidence base

C. difficile spores can survive in the environment for months or years and unless removed by assiduous cleaning can be found on multiple surfaces in healthcare settings (Fekety and others, 1981; McFarland and others, 1989; O'Neill and others,1993).

Not surprisingly, the heaviest contamination is often on floors, commodes, toilets, bedpans and bed frames, which are subject to faecal contamination. One good retrospective cohort study showed statistically significant reductions in CDI rates in a bone marrow transplant unit following the introduction of the following infection control interventions:

- education
- hand hygiene
- glove wearing
  environmental cleaning with 1:10 hypochlorite solution
  (Apisarnthanarak and others, 2004)

A range of studies show that improvements in environmental cleaning, such as the introduction of hypochlorite or other sporicidal agents, will lead to an associated reduction in CDI rates.

A simple educational intervention to change the way cleaning was undertaken by in-house cleaning staff, using bleach disinfection, dramatically reduced environmental contamination with *C. difficile* and vancomycin-resistant enterococci (Eckstein and others, 2007). It is essential that the clinical environment can be cleaned with sporicidal agents. [2025 expert review: retained with updated text.]

The rate of environmental contamination with *C. difficile* has been shown to increase according to the carriage and symptom status of the patients. Contamination is lowest in rooms of culture-negative patients and highest in rooms of symptomatic patients. Regardless of signs or symptoms, every bed space should be decontaminated. [2025 expert review: retained with updated text.]

Samore and colleagues showed that the environmental prevalence of *C. difficile* correlated with the extent of contamination of healthcare workers' hands by this bacterium (Samore and others, 1996).

Environmental contamination has been linked to spread of *C. difficile* via equipment, for example, contaminated commodes (McFarland and others, 1989; Samore and others, 1996;

Fawley and Wilcox, 2001), blood pressure cuffs (Manian and others, 1996), and oral and rectal thermometers (Brooks and others, 1992; Brooks and others, 1998; Jernigan and others, 1998). [2025 expert review: retained with updated text.]

Effective cleaning of the environment has been demonstrated to reduce the incidence of *C. difficile* (Kaatz and others, 1988; Wilcox and others, 2003). Cleaning by detergent alone has been shown to be insufficient to decontaminate and studies have demonstrated there is a need for a sporicidal product.

Various disinfectants are available, but some products are not sporicidal and may enhance sporulation (Fawley and others, 2007). It is advisable to review the product literature before adopting an agent for disinfection against *C. difficile* and ensure compatibility of the disinfectant with materials and surfaces, as per manufacturer's instructions. [2025 expert review: retained with updated text.]

A report published in 2007 highlighted the use of hydrogen peroxide vapour (HPV) to reduce environmental contamination with *C. difficile* (Boyce, 2007). In this study, *C. difficile* was isolated from 2.4% of swab cultures and 25.6% of sponge cultures before the use of HPV, and both figures were reduced to zero after the use of HPV. The incidence of new nosocomial cases decreased from 1.36 cases per 1,000 patient days to 0.84 cases per 1,000 patient days. The decrease could not be attributed to changes in antimicrobial usage patterns. However, the viability of this method is limited both by its cost and by the practical considerations of the room or area that needs to be vacated by patients and staff, left empty for several hours and/or sealed. The use of HPV does not replace the need for cleaning and disinfection but can be deployed as an adjunct to this. [2025 expert review: retained with updated text.]

There is no published evidence of colonoscopies acting as vectors, but failure of disinfection will result in a potent vector for cross-infection. [2025 expert review: retained with updated text.]

Guidance on the management and decontamination of endoscopes [2025 expert review: content superseded by the Health Technical Memorandum 01-06: Decontamination of flexible endoscopes. Part C: Operational management.]

The efficacy of cleaning is critical to the success of decontamination in general, and therefore the acceptability of disinfection regimens to their users is a key issue. [2025 expert review: retained with updated text.]

Recommendations

4.1 Environmental cleaning and disinfection of rooms or bed spaces of CDI patients should be carried out at least daily using a sporicidal agent (in line with the manufacturer's guidance on sporicidal activity). [2025 expert review: retained with updated text.]

4.2 All commodes, toilets and bathroom areas of CDI patients should be cleaned and disinfected with a sporicidal agent in line with the manufacturer's guidance on sporicidal activity. All commodes, toilets and bathroom areas dedicated to a single patient should be cleaned frequently and always when visibly soiled. Any commodes, toilets and bathroom areas shared with other patients should be cleaned and disinfected after each use. [2025 expert review: retained with updated text.]

4.3 Trusts should ensure that all clinical areas are assessed for cleanliness and ensure that they have introduced the National standards of healthcare cleanliness 2025. [2025 expert review: retained with updated text.]

4.4 Cleaning and disinfection of a mattress, bed space, bay or ward area after the discharge, transfer or death of a patient with CDI, should be thorough. All areas should be cleaned using a sporicidal agent in line with the manufacturer's guidance on sporicidal activity, and curtains changed. To provide total disinfection of the environment and equipment in single rooms or isolation wards, consideration should be given to the use of vaporised hydrogen peroxide. Trusts should have a specific protocol for this and should carry out an audit of compliance with it. [2025 expert review: retained with updated text.]

4.5 The ward environment should not be cluttered. Medical equipment should ideally be for single patient use, but if this is not possible it should be thoroughly cleaned before and after each patient use. This process should be recorded and audited together with regular checks of the integrity of surfaces including mattress covers. [2025 expert review: retained with updated text.]

4.6 Sporicidal cleaning agents should be used according to manufacturers' instructions. Refer also to the Health and Safety Executive's Control of Substances Hazardous to Health (COSHH) guidance. [2025 expert review: retained with updated text.]

4.7 Routine environmental screening for *C. difficile* is not recommended but may be useful to ascertain whether cleaning standards are suboptimal, notably in an outbreak or hyperendemic setting.

4.8 Organisations should ensure that, through their governance processes, systems are in place to monitor IPC practice and audit locally (such as link champions, Clinical Lead roles, and audit or quality improvement processes). [2025 expert review: retained with updated text.]

5. Hand hygiene in the prevention of CDI

Evidence base

Contamination of hands of healthcare workers and patients by *C. difficile* is a well-established route of transmission. There is a strong correlation between hand-carriage of organisms and the intensity of environmental contamination, and this is high and persistent in the rooms of those patients with both symptomatic and asymptomatic faecal carriage of the organism (McFarland and others, 1989; Samore and others, 1996). Wearing vinyl gloves significantly reduces but does not prevent hand contamination (Johnson and others, 1990).

Hand hygiene by washing with liquid soap and water effectively decontaminates hands from both the spore and vegetative forms of the organism. Alcohol handrub or other disinfecting agents are effective in removing the vegetative form. Although alcohol handrub and disinfecting agents reduce spore contamination, they do not do so as effectively as soap and water, as they leave more spores on the hands to be ingested or transmitted (Boyce and Pittet, 2002; National *Clostridium difficile* Standards Group, 2004; Leischner and others, 2005). Alcohol handrub does not remove norovirus (Boyce and Pittet, 2002) – a fact which further strengthens the case for using soap and water in cases of suspected infective diarrhoea.

Interventions leading to increased hand washing compliance significantly reduced the incidence of diarrhoeal illness in community settings (Curtis and Cairncross, 2003; Stone and others, 2001). [2025 expert review: retained with updated text.]

Compliance by healthcare workers with hand hygiene guidance is known to be poor (Boyce and Pittet, 2002). Systematic reviews suggest that audit and feedback may be the most effective ways to improve compliance (Naikoba and Hayward, 2001; Grimshaw and others, 2004; Jamtvedt and others, 2006). The core recommendations in the World Health Organization (WHO) consensus guidelines suggest a multimodal intervention strategy consisting of system change, training and education, audit, promotion and culture change (WHO, 2005). Available measures to audit hand hygiene are methodologically limited (Gould and others, 2007; Haas and Larson, 2007). [2025 expert review: retained with updated text.]

The risk of cross-transmission to healthcare workers appears to be very low (Delmee, 1989). *C. difficile* is widely distributed in the environment and thus may be encountered in many ways without resulting infection.

A very small number of cases of CDI in healthcare workers have been reported (Strimling and others, 1989; Arfons and others, 2005), despite the high potential for exposure of this population to *C. difficile*. Good personal hygiene and adherence to IPC precautions will minimise this risk still further. [2025 expert review: retained with updated text.]

Recommendations

5.1 All healthcare workers should wash their hands with soap and water before and after contact with patients with suspected or proven CDI or any other infective diarrhoea, and after contact with the patient's immediate environment or body fluids, in line with the SIGHT protocol. Hands should be dried thoroughly thereafter. (Grade A)

5.2 All healthcare workers must use disposable gloves and aprons for any physical contact with such patients and the patient's immediate environment and body fluids, in line with the SIGHT protocol. Gloves and aprons should be removed after use, as close to the point of care as possible, and disposed of according to waste policy, before washing hands as outlined in recommendation 5.1. [2025 expert review: retained with updated text.]

5.3 Alcohol handrub must not be used as an alternative to soap and water where a patient has gastrointestinal symptoms, including CDI. [2025 expert review: retain with updated text.]

5.4 Trusts should audit standard infection control precautions and transmission-based precautions (specifically hand hygiene and personal protective equipment (PPE) use) among staff caring for patients with suspected or proven infective diarrhoea. Infection control link practitioners have a key role in this. [2025 expert review: retained with updated text to reflect the latest advice in the NIPCM.]

5.5 Patients should be regularly offered opportunities to clean their hands. Some patients may need assistance with this, especially if they are unable to get out of bed. Soap and water or single use detergent hand wipes can be used. Patients should clean their hands before eating food, after using the bathroom, commode or bedpan, and as part of respiratory hygiene, for example after nose blowing, coughing, or sneezing. [2025 expert review: retained with updated text.]

5.6 Visitors to the patient should be encouraged to wash their hands on entering and leaving the clinical area. [2025 expert review: retained with updated text.]

6. Coping with high prevalence

Evidence base

Observational, mainly retrospective, time-series studies report the success of multiple measures (antimicrobial stewardship, cleaning, isolation, hand washing and use of gloves and aprons) in reducing epidemic or high endemic levels of CDI.

These studies, although often methodologically flawed (Davey and others, 2006; Stone and others, 2007a, b), largely replicate the findings of the better-quality studies that have looked at how isolation measures as part of a multifaceted intervention can reduce high endemic levels of MRSA (Cooper and others, 2004b).

Such combined interventions require institutional commitment, senior leadership and a multidisciplinary approach. A 24-month study in Florida (Whitaker and others, 2007) showed the successful effect of introducing a jointly developed protocol with clinical and nursing teams and an IPCT. The intervention involved:

- environmental cleaning, lapses of which were quickly identified by daily visits from the IPCT
- an educational tool for patients and visitors
- automated reporting
- standardised local surveillance combined with a multidisciplinary team isolation procedure

Weekly reports by the nursing director and daily rounds by nursing leadership kept the direct line supervisors informed of changes in rates and the emergence of local peaks of infection. The authors comment that these peaks were invariably associated with lapses in procedure. This underlines the great importance in the endemic CDI situation of maintaining clear, effective infection control protocols, which are independently supervised and enforced.

The results of such studies are reinforced by the findings of the HCC investigations into the CDI outbreaks at Stoke Mandeville (Commission for Healthcare Audit and Inspection, 2006) and Maidstone and Tunbridge Wells (Healthcare Commission, 2007b).

These reports emphasise the role to be played by coordinated implementation of:

- antimicrobial stewardship
- cleaning and disinfection
- surveillance
- hand hygiene
- isolation

- early *C. difficile* testing in line with advice in SMI B 10 – Investigation of faecal specimen for Clostridioides difficile
- restricting the movements of patients between wards

[2025 expert review: retained with updated text]

The reports state unambiguously the need for clear operational policies, good communication with patients, relatives and the public, and reciprocal, proactive relationships with regional HPTs. They criticise delays in opening isolation wards resulting from financial, access and other targets being given priority over patient safety. The lessons to be learnt in the wider NHS from these reports have informed our recommendations, which have also been influenced by the highly successful structured approach adopted to bring the Stoke Mandeville outbreak under control.

The HCC report on HCAI (Healthcare Commission, 2007a) reported significantly lower CDI rates in trusts that had policies restricting bed movement and in those where the IPCT regularly attended bed management meetings.

The same report also established that there were lower rates of CDI where infection control link practitioners were widespread across the trust. Although 86% of trusts had these in at least 50% of clinical areas, only 23% had them in all areas.

Recommendations

6.1 Increase the activity of the IPCT to:

- institute at least weekly meetings involving all aspects of the operational bed management and facilities management
- institute daily review of new and existing cases of CDI
- assess the severity of the clinical condition of the patient
- implement IPC measures outlined in this guidance
- establish an integrated approach to ensure robust communication to staff, patients and visitors, and a risk-based approach (which includes operational and facilities management teams) to ensure appropriate patient placement and cleanliness of the environment

[2025 expert review: retained with updated text]

6.2 Review isolation procedures by:

- risk assessing use of single rooms daily: if an isolation or cohort bay is being established, liaise with the clinical and site teams
- drawing up a detailed operational plan for both clinical management and facilities support

- considering the use of cohort care by the multi-disciplinary team in bays, with a focus on maintaining cleanliness of toilets and commodes, and supervising staff contact precautions
  [2025 expert review: retained with updated text]

6.3 Optimise ward cleaning and disinfection by:

- in the absence of easy biological indicators of the persistence of *C. difficile* spores in the environment, adhering tightly to cleaning protocols based upon the national standard of cleanliness and use sporicidal agents
- increasing frequency of cleaning and disinfection of shared medical equipment and high touch points as feasible
- providing clinical areas with sufficient numbers of trained staff to meet enhanced cleaning demands
- ensuring terminal cleaning processes to optimise removal of CDI spores on patient discharge, cohort or outbreak cessation
- auditing compliance with IPC and cleaning guidelines to provide assurance [2025 expert review: retained with updated text]

6.4 Institute intensive local surveillance. The senior management of the affected facility, for example the trust board, should be informed of a period of increased incidence by the DIPC and should be kept updated with respect to numbers of cases, areas affected and progress of intervention or implementation challenges, all of which should be formally documented. [2025 expert review: retained with updated text]

6.5 Communicate diagnostic microbiology results as rapidly as possible. Typing of isolates should be undertaken and used to advise response.

6.6 The AMS Team should perform an audit of prescribed antimicrobials in affected areas at least weekly to ensure guidance on antibiotic usage is strictly followed, and this should be supported by a consultant medical microbiologist / infectious disease physician. [2025 expert review: retained with updated text]

6.7 Reduce the movement of patients and staff to an operationally effective minimum:

- movement of patients with diarrhoea both within and between wards will lead to the spread of CDI
- patients and staff in isolation wards and cohort bays should have minimal contact with unaffected ward areas
- the movement of beds, commodes, trolleys and other equipment between areas should be minimised.
- equipment must be decontaminated after every use [2025 expert review: retained with updated text.]

6.8 Enhance communications with all parties and staff:

- establish timely and relevant communications to all sections of the trust, including patients and visitors
- ensure appropriate communication with the HPT, commissioners, and other local healthcare facilities depending upon the severity of the incident
- provide feedback on progress with CDI control to affected clinical areas and wider organisation
- consider issuing press statements and information to the media and the public [2025 expert review: retained with updated text.]

7. CDI in the community

Evidence base

The HCC report on Maidstone and Tunbridge Wells NHS Trust (Healthcare Commission, 2007b) reported that 10% of CDI was community acquired. In a prospective case-control UK study in 2 geographically distinct locations (Leeds and Truro), the proportions of randomly selected community-derived faecal samples positive for *C. difficile* cytotoxin was 2.1% in both cohorts (Wilcox and others, 2008).

The calculated annual incidences were 29.5 cases per 100,000 individuals in the urban setting of Leeds and 20.2 cases per 100,000 individuals in Truro. Exposure to antibiotics in the previous 4 weeks, particularly multiple agents (p=0.001), aminopenicillins (p=less than 0.05) and oral cephalosporins (p=less than 0.05), was significantly more frequent among cases than controls. Hospitalisation in the preceding 6 months was significantly associated with CDI (45% versus 23%; p=0.022). However, approximately one-third of the patients had neither exposure to antibiotics nor recent hospitalisation. Contact with infants aged 2 years and younger was significantly associated with CDI (14% versus 2%; p=0.02).

The HCC/HPA survey (Healthcare Commission, 2006) found that 36% of trusts reported that 6% of CDI came from community hospitals, with 50% reporting that an identical proportion came from General Practice cases. Chapter 2 of this report has, however, documented the widespread failure to test or report community and care home samples.

Studies in the USA show that CDI may be endemic in nursing homes, with rates as high as 33%. According to studies in the USA and Canada, care homes are not the only settings associated with considerable antibiotic use, much of it inappropriate (Simor and others, 2002; Quinn and others, 2007); they are also settings which receive residents from hospital who have suffered from CDI in hospital. There is the potential for two-way transmission of CDI between hospital and care home, the so-called “two-way street” (Rosenberg, 1995).

The extent and appropriateness of antibiotic use in UK care homes have not been studied, nor have the transmission dynamics between care homes and hospitals.

There are reports that some cases of CDI in the community may be associated with the use of PPIs. Two retrospective studies have suggested that community-associated CDI in England is associated with use of PPIs (Dial and others, 2005, 2006). A hospital-based case-control study in Wales also found that CDI was independently associated with antibiotic use, acid suppression therapy and female sex (Yearsley and others, 2006). However, 2 large series reviews and a review of the literature have failed to demonstrate such an association. Data confounding, which is inherent in retrospective studies, is likely to affect risk factor analyses, and prospective studies are needed to resolve this issue (Pépin and others, 2005;

Lowe and others, 2006). The Leeds and Truro study found no association between CDI and PPIs in the community (Wilcox and others, 2008).

Patients who have had CDI and become asymptomatic continue to excrete *C. difficile* in their stools and/or remain toxin positive. They should observe the normal personal hygiene precaution of hand washing after using the toilet.

National policy

Notification of suspected CDI outbreak in care homes [2025 expert review: content superseded by the DHSC Care homes: infection prevention and control (2013) guidance.]

Recommended good practice on appropriate antimicrobial prescribing is available in NICE guideline: Antimicrobial stewardship: systems and processes for effective antimicrobial medicine use [NG15] and the TARGET antibiotics toolkit. [2025 expert review: retained with updated text. Further information can be found in the UKHSA - Antimicrobial stewardship: start smart then focus toolkit and the DHSC - Guidance for compliance with criterion 3: antimicrobial use in the Health and Social Care Act 2008: code of practice on the prevention and control of infections and related guidance.]

Recommendations

7.1 Ideally, all patients aged 2 years old and above with diarrhoea, that is not attributable to an underlying condition such as inflammatory colitis or therapy such as laxatives, will be tested for *C. difficile*.

However, acknowledging the variation in laboratory context such as regional epidemiological data, a local decision should be made in liaison with relevant stakeholders, including health authorities and commissioning bodies as to who should be tested. This decision should also consider the impact on end users, including clinical and public health professionals and patients.

As a minimum, the following patients who are in the community should be tested:

- all community patients aged 65 years old and above
- community patients under 65 years old when specifically requested and in situations specific to the following, but not limited to them:
  - if *C. difficile* is mentioned in request clinical details
  - if the patient is recognised by the testing laboratory, microbiologists or IPC team as previously having *C. difficile*
  - if current or prior antibiotic therapy is mentioned
  - if a hospital admission is mentioned

- if residence at a care home or other community care facility is indicated by the patient address, or mentioned on the request form
- immunocompromised (for example transplant patients, patients on chemotherapy)
- inflammatory bowel disease (IBD), such as Crohn's disease or ulcerative colitis
- recent abdominal surgery
- chronic renal/kidney disease (CKD)
- if clinical details indicate patient has been prescribed a PPI (such as lansoprazole, omeprazole)

Note: CDI is not confined to the groups above and may not have been considered by the requestor. Half of community CDI cases may be undetected because of absence of clinical suspicion, accounting for 3 times more undiagnosed adults in the community compared with hospitals in one study.
[2025 expert review: updated text to reflect changes in SMI B 10 - Investigation of faecal specimens for Clostridioides difficile. Further information for laboratories is available in SMI B 10 - Investigation of faecal specimens for Clostridioides difficile and on the CDRN service webpage.]

7.2 For case and outbreak definitions, see 'Chapter 1: Clinical Definitions and Laboratory diagnosis'. [2025 expert review: superseded by updated content in guidance]

7.3 If there is a significant number of cases of community-onset CDI, further investigations should be undertaken to assess whether they reflect true community-acquired infections or recent discharges from hospital. Understanding the source and causes of infection will help in targeting efforts to reduce infections. (Grade C).

7.4 If 2 or more cases of diarrhoea that are suspected or known to be infectious occur within a few days at a care home or other community institution, the registered manager is responsible for reporting this to the local HPT. (Grade B).

7.5 Outbreaks of CDI in institutional settings should be investigated in the same way as in the acute hospital setting. (Grade B).

7.6 Healthcare workers and caregivers in the community, who have contact with people with diarrhoea, should wear disposable gloves and aprons for all contact with them and their environment. After contact they should dispose of these items and wash their own hands with liquid soap and water. [2025 expert review: retained with updated text]

7.7 Staff in the community who have diarrhoea should not work unless they have been symptom-free for 48 hours or the diarrhoea has been shown to be non-infectious and not a risk to others. Staff with continuous severe diarrhoea should be investigated and followed up. (Grade B).

7.8 The ICB, HPT and DIPC in a locality should jointly prepare local protocols on the investigation and management of cases according to national guidance and should define out-of-hours arrangements between relevant parties. (Grade C)

7.9 Guidance on prescribing antibiotics in the community should be followed. PPIs should be used only when there is a clear clinical indication. [2025 expert review: retained with updated text to reflect the advice in PresQIPP - Proton Pump Inhibitors (PPIs): long term safety and gastroprotection briefing]

7.10 There should be no restriction on institutions such as care homes receiving patients who have had CDI and are now clinically asymptomatic. Care should be taken to communicate the individual's infections status clearly to staff and General Practitioners (GPs), issuing a proforma letter such as the one in Appendix 3. (Grade C).

8. Death certification

Evidence base

The HCC report into the Maidstone and Tunbridge Wells outbreak found that in approximately 12% of patients, death was mainly due to CDI (Healthcare Commission, 2007b). Despite this, death certificates did not mention CDI in 65% of cases where it was considered to be a definite or probable cause of death.

Similar statistics were reported for deaths in patients with MRSA in a confidential study of deaths published in November 2007, indicating a widespread misreporting of deaths due to HCAI (Health Protection Agency, 2007).

The hospital-onset 30-day all-cause case-fatality rate of *C. difficile* infections nationally is estimated to be 19% (UKHSA, 2025) and secondary care trusts should maintain comparative data on this. Assessment of criteria for attributing death to CDI is urgently needed. [2025 expert review: retained with updated text.]

Comparative studies with other or matched hospital populations are needed, and given the recurrent nature of the illness a systematic analysis is also required of the period of time over which excess mortality in *C. difficile* patients is sustained.

Trusts should consider urgent medical action to manage cases if their audited 30-day mortality rate approaches 20%.

National policy

Death certification is an important source of information about the mortality associated with different diseases, both for clinicians and for those responsible for planning and managing health services and recognising priorities for medical research (Chief Medical Officer, 2007). It is also an important source of information for the relatives of those who have died.

The medical profession has a legal responsibility to ensure that the certificate accurately reflects the sequence of events leading to death (Chief Medical Officer, 2007). [2025 expert review: retained with updated text.]

The underlying cause of death is defined as “the disease or injury which initiated the train of morbid events leading directly to death”. This wording should appear on the lowest completed line of Part 1 of the medical certificate of cause of death.

For any death from an infectious disease, the following should be documented on the death certificate (General Register Office/ONS’s Death Certification Advisory Group, 2007):

- the place of death
- the infecting organism (if known)
- the presence of any antibiotic resistance
- the route or source of infection

If the source of the infectious disease is healthcare associated, this should be stated clearly on the certificate.

If an HCAI was part of the sequence of events leading to death, it should appear in Part 1 of the certificate. If it was not part of the direct sequence but contributed to the death, it should be mentioned in Part 2 (Chief Medical Officer, 2007; General Register Office/ONS's Death Certification Advisory Group, 2007). Appendix 4 gives examples of correct entries for CDI and other HCAIs. [2025 expert review: updated Appendix 4 to reflect latest Guidance for medical practitioners completing medical certificates of cause of death in England and Wales.]

Guidance is required on later attribution of death after retrospective review subsequent to the issue of death certificates.

Example of good practice

In Shrewsbury, all patients with *C. difficile* are matched against the national database and any death occurring within 30 days is identified. A progressive centrally initiated audit and report, covering all death certification relevant to *C. difficile*, are being conducted by a gastroenterologist and the medical director.

Recommendations

8.1 If a patient with CDI dies, the medical certificate of cause of death should state whether CDI was part of the sequence of events leading directly to death or whether it was the underlying cause of death. If either case applies CDI should be mentioned in Part 1 of the certificate. (Grade B)

8.2 If CDI was not part of the sequence of events leading directly to death but contributed in some way to it, this should be mentioned in Part 2. (Grade B)

8.3 If a doctor is in doubt about the circumstances of death when writing the certificate, they should consult with the trust's multidisciplinary clinical review team for CDI or the infectious diseases/medical microbiology team who are familiar with the case. [2025 expert review: retained with updated text.]

8.4 Doctors have a legal duty to mention CDI on a medical certificate of cause of death if it was part of the sequence of events directly leading to death or contributed in some way. (Grade B)

8.5 Medical directors should ensure that training is provided on death certification and should audit certificates to check that they accurately record HCAI. (Grade B)

9. Governance, audit and performance indicators

[2025 expert review: content superseded.]

Healthcare providers have a statutory duty under the Health and Social Care Act 2008 (Regulated Activities) Regulations to ensure safe care and treatment, including the effective prevention and control of infection. Governance arrangements must provide assurance that systems are in place to identify, investigate, and manage *Clostridioides difficile* infections in accordance with national standards. Laboratory diagnosis must adhere to the SMI B 10 – Investigation of faecal specimen for Clostridioides difficile to ensure consistency, accuracy, and clinical reliability.

Providers are expected to maintain robust surveillance, timely testing, and multidisciplinary case review processes. These activities should be regularly audited and reported through established governance structures such as IPC Committees and Trust Boards supported by integrated performance dashboards. Outcomes should inform continuous quality improvement, antimicrobial stewardship, and patient safety initiatives, in line with national priorities and the Patient Safety Incident Response Framework (PSIRF).

The Health and Social Care Act 2008: code of practice on the prevention and control of infections 2022 includes governance, audit and performance indicators for healthcare providers in:

- Regulation 12 – Safe care and treatment: providers must assess risk and prevent the spread of infections, using suitable equipment, premises, and staff training
- Regulation 15 – Premises and equipment: includes maintaining environments and equipment that minimise the risk of infection
- Regulation 17 – Good governance: requires providers to maintain accurate records, conduct regular audits (including IPC performance data), and implement learning from incidents

These regulations mean that providers must have systems in place to monitor CDI rates, investigate incidents, and continually improve infection control practices.

Acknowledgements

The authors gratefully acknowledge the expert advice received from the review group.

Expert review group membership

- Anda Samson (UKHSA)
- Ashley Flores (Infection Prevention Society)
- Carole Fry (UKHSA) – Co-Chair
- Caroline Mitchell (Healthcare Infection Society)
- Catherine Searle (UKHSA)
- Colin Brown (UKHSA)
- Dakshika Jeyaratnam (UKHSA) – Co-Chair
- David Partridge (British Infection Association)
- Dimple Chudasama (UKHSA)
- Ellie Evans (UKHSA)
- Emma Spooner (Infection Prevention Society)
- Fiona Hammond (NHS England)
- Jessica Martin (Leeds Teaching Hospitals NHS Trust)
- Paul Campbell (UKHSA)
- Richard Catlin (Infection Prevention Society)
- Russell Hope (UKHSA)
- Samantha Matthews (Public Health Wales)

The review group thanks all the individuals outside of the group who gave freely of their time in discussion, in particular Bharat Patel (UKHSA), Diane Ashiru-Oredope (UKHSA), Rachel Berry (UKHSA), Anika Rahim (UKHSA), Mark Wilcox (NHSE), and Nicholas Lambert (DHSC).

This guidance was approved and signed off by the UK Health Security Agency AMR and HCAI Division.

Contact details

For queries relating to this document, please contact HCAIAMR.IOIG@ukhsa.gov.uk

References

1. Apisarnthanarak A, Zack JE, Mayfield JL and others (2004). 'Effectiveness of environmental and infection control programs to reduce transmission of *Clostridium difficile*' Clinical Infectious Diseases volume 39, pages 601 to 602
2. Arfons L, Ray AJ and Donskey CJ (2005). '*Clostridium difficile* infection among health care workers receiving antibiotic therapy' Clinical Infectious Diseases, volume 40, pages 1,384 to 1,385
3. Boyce JM (2007). 'Environmental contamination makes an important contribution to hospital infection' Journal of Hospital Infection, volume 65, supplement 2, pages S50 to S54
4. Boyce JM and Pittet D (2002). 'Guideline for hand hygiene in health-care settings: recommendations of the Healthcare Infection Control Practices Advisory Committee and the HICPAC/SHEA/APIC/IDSA Hand Hygiene Task Force' Infection Control and Hospital Epidemiology, volume 23, pages S3 to S40
5. Brooks SE, Veal RO, Kramer M and others (1992). 'Reduction in the incidence of *Clostridium difficile*-associated diarrhea in an acute care hospital and a skilled nursing facility following replacement of electronic thermometers with single-use disposables' Infection Control and Hospital Epidemiology, volume 13, pages 98 to 103
6. Brooks S, Khan A, Stoica D and others (1998). 'Reduction in vancomycin-resistant Enterococcus and *Clostridium difficile* infections following change to tympanic thermometers' Infection Control and Hospital Epidemiology, volume 19, pages 333 to 336
7. Chief Medical Officer (2007). Healthcare Associated Infections and Death Certification PL CMO (2007)8
8. Chief Medical Officer/Chief Nursing Officer (2005). Infection caused by Clostridium difficile PL CMO (2005)6
9. Chief Medical Officer/Chief Nursing Officer (2008). Changes to the mandatory healthcare associated infection surveillance system for Clostridium difficile infection (CDI) from 1st January 2008. PL CMO (2008)1
10. Commission for Healthcare Audit and Inspection (2006). 'Investigation into outbreaks of *Clostridium difficile* at Stoke Mandeville Hospital, Buckinghamshire Hospitals NHS Trust'
11. Committee on Public Accounts (2000). Select Committee on Public Accounts: 6 March 2000
12. Cooper BS, Medley GF and Cookson B (2004b) 'Methicillin-resistant *Staphylococcus aureus* in hospitals and the community: Stealth dynamics and control catastrophes' PNAS, volume 101, pages 10223 to 10228
13. Curtis V and Cairncross S (2003). 'Effect of washing hands with soap on diarrhoea risk in the community: a systematic review' Lancet Infectious

Diseases, volume 3, pages 275 to 281

14. Davey P, Brown E, Fenelon L and others (2006). 'Systematic review of antimicrobial drug prescribing in hospitals' Emerging Infectious Diseases, volume 12, pages 211 to 216
15. Delmee M, Van Broeck J, Simon A and others (2005). 'Laboratory diagnosis of *Clostridium difficile*-associated diarrhoea: a plea for culture' Journal of Medical Microbiology, volume 54, pages 187 to 191
16. Dial S, Delaney JA, Barkun AN and Suissa S (2005). 'Use of gastric acid-suppressive agents and the risk of community-acquired *Clostridium difficile* associated disease Journal of the American Medical Association, volume 294, pages 2,989 to 2,995
17. Dial S, Delaney JA, Schneider V and Suissa S (2006). 'Proton pump inhibitor use and risk of community-acquired *Clostridium difficile*-associated disease defined by prescription for oral vancomycin therapy' Canadian Medical Association Journal, volume 175, issue 7, pages 745 to 748
18. Eckstein BC, Adams DA, Eckstein EC and others (2007). 'Reduction of Clostridium difficile and vancomycin-resistant Enterococcus contamination of environmental surfaces after an intervention to improve cleaning methods' BMC Infectious Disease, volume 7, issue 61
19. Fawley WN and Wilcox MH (2001). 'Molecular epidemiology of endemic *Clostridium difficile* infection' Epidemiological Infections, volume 126, pages 343 to 350
20. Fawley WN, Underwood S, Freeman J and others (2007). 'Efficacy of hospital cleaning agents and germicides against epidemic *Clostridium difficile* strains' Infection Control and Hospital Epidemiology, volume 28, pages 920 to 925
21. Fekety R, Kim KH, Brown D and others (1981). Epidemiology of antibiotic-associated colitis; isolation of *Clostridium difficile* from the hospital environment' American Journal of Medicine, volume 70, pages 906 to 908
22. Fowler S, Webber A, Cooper BS and others (2007). 'Successful use of feedback to improve antibiotic prescribing and reduce *Clostridium difficile* infection: a controlled interrupted time series' Journal of Antimicrobial Chemotherapy, volume 59, pages 990 to 995
23. General Register Office/Office for National Statistics' Death Certification Advisory Group (2007). Guidance for doctors certifying cause of death in England and Wales
24. Gould DJ, Chudleigh J, Drey MS and Moralejo D (2007). 'Measuring handwashing performance in health service audits and research studies' Journal of Hospital Infection, volume 66, pages 109 to 115
25. Grimshaw JM, Thomas RE, MacLennan G and others (2004). 'Effectiveness and efficiency of guideline dissemination and implementation strategies' Health Technol Assessment, volume 8, pages iii to 72
26. Gustafson TL (2000). 'Practical risk-adjusted quality control charts for infection control' American Journal of Infection Control, volume 28, pages 406 to 414

27. Haas JP and Larson EL (2007). 'Measurement of compliance with hand hygiene' Journal of Hospital Infection, volume 66, pages 6 to 14
28. Haley RW, Culver DH, White JW and others (1985). 'The efficacy of infection surveillance and control programs in preventing nosocomial infections in US hospitals' American Journal of Epidemiology, volume 121, pages 182 to 205
29. Health and Safety Executive (2005). COSHH: A brief guide to the Regulations
30. Health Protection Agency (2006). 'Clostridium difficile: Findings and recommendations from a review of the epidemiology and a survey of Directors of Infection Prevention and Control in England'
31. Health Protection Agency (2007). 'National Confidential Study of Deaths Following Meticillin-resistant *Staphylococcus aureus* Infection'
32. Healthcare Commission (2006). 'Management, Prevention and Surveillance of Clostridium difficile: Interim findings from a national survey of NHS acute trusts'
33. Healthcare Commission (2007a). 'Healthcare associated infection: What else can the NHS do?'
34. Healthcare Commission (2007b). 'Investigation into outbreaks of *Clostridium difficile* at Maidstone and Tunbridge Wells NHS Trust'
35. HM Government (1974). Health and Safety at Work etc. Act 1974
36. Jamtvedt G, Young JM, Kristoffersen DT and others (2006). 'Audit and feedback: effects on professional practice and health care outcomes' Cochrane Database Systematic Reviews 2006, issue 1
37. Jernigan JA, Siegman-Igra Y, Guerrant RC and Farr BM (1998). 'A randomized crossover study of disposable thermometers for prevention of *Clostridium difficile* and other nosocomial infections' Infection Control and Hospital Epidemiology, volume 19, pages 494 to 499
38. Johnson S, Gerding DN, Olson MM and others (1990). 'Prospective, controlled study of vinyl glove use to interrupt *Clostridium difficile* nosocomial transmission' American Journal of Medicine, volume 88, pages 137 to 140
39. Kaatz GW, Gitlin SD, Schaberg DR and others (1988). 'Acquisition of *Clostridium difficile* from the hospital environment' American Journal of Epidemiology, volume 127, pages 1,289 to 1,294
40. Leischner S, Johnson S, Sambol J and others (2005). 'Effect of alcohol hand gels and chlorhexidine hand wash in removing spores of *Clostridium difficile* (CD) from hands' 45th Interscience Conference on Antimicrobial Agents and Chemotherapy, Washington DC
41. Lowe DO, Mamdani MM, Kopp A and others (2006). 'Proton pump inhibitors and hospitalization for *Clostridium difficile*-associated disease: a population-based study' Clinical Infectious Diseases, volume 43, pages 1,272 to 1,276
42. Manian FA, Meyer L and Jenne J (1996). '*Clostridium difficile* contamination of blood pressure cuffs: a call for a closer look at gloving practices in the era of universal precautions' Infection Control and Hospital Epidemiology, volume 17, pages 180 to 182

43. McFarland LV, Mulligan ME, Kwok RY and Stamm WE (1989). 'Nosocomial acquisition of *Clostridium difficile* infection' New England Journal of Medicine, volume 320, pages 204 to 210
44. Musher DM, Logan N, Hamill RJ and others (2006). 'Nitazoxanide for the treatment of *Clostridium difficile* colitis' Clinical Infectious Diseases, volume 43, pages 421 to 427
45. Musher DM, Nuila F and Logan N (2007). 'The long-term outcome of treatment of *Clostridium difficile* colitis' Clinical Infectious Diseases, volume 45, pages 523 to 534
46. Naikoba S and Hayward A (2001). 'The effectiveness of interventions aimed at increasing handwashing in healthcare workers – a systematic review' Journal of Hospital Infection, volume 47, pages 173 to 180
47. National Clostridium difficile Standards Group (2004). 'Report to the Department of Health' Journal of Hospital Infection, volume 56, supplement 1, pages S1 to S38
48. O'Neill G, Adams JE, Bowman RA and Riley TV (1993). 'A molecular characterization of *Clostridium difficile* isolates from humans, animals and their environments' Epidemiology and Infection, volume 111, pages 257 to 264
49. Pépin J, Saheb N, Coulombe MA and others (2005). 'Emergence of fluoroquinolones as the predominant risk factor for *Clostridium difficile*-associated diarrhea: a cohort study during an epidemic in Quebec' Clinical Infectious Diseases, volume 41, pages 1,254 to 1,260
50. Quinn LK, Chen Y and Herwaldt LA (2007). 'Infection control policies and practices for Iowa long-term care facility residents with *Clostridium difficile* infection' Infection Control and Hospital Epidemiology volume 28, pages 1,228 to 1,232
51. Rosenberg J (1995). 'Methicillin-resistant *Staphylococcus aureus* (MRSA) in the community: who's watching?' Lancet, volume 346, pages 132 to 133
52. Samore MH, Venkataraman L, DeGirolami PC and others (1996). 'Clinical and molecular epidemiology of sporadic and clustered cases of nosocomial *Clostridium difficile* diarrhea' American Journal of Medicine, volume 100, pages 32 to 40
53. Simor AE, Bradley SF, Strausbaugh LJ and others (2002). '*Clostridium difficile* in long-term care facilities for the elderly' Infection Control and Hospital Epidemiology, volume 23, pages 696 to 703
54. Stone S, Kibbler C, How A and Balstrini A (2000). 'Feedback is necessary in strategies to reduce hospital acquired infection' BMJ, volume 321, pages 302 to 303
55. Stone S, Teare L and Cookson B (2001). 'Guiding hands of our teachers: Hand-hygiene Liaison Group' Lancet, volume 357, pages 479 to 480
56. Stone S, Cooper B, Kibbler C and others (2007a). 'The ORION statement: Guidelines for Transparent Reporting of Outbreak Reports and Intervention studies Of Nosocomial infection' Lancet Infectious Diseases, volume 7, pages

282 to 288

57. Stone S, Cooper B, Kibbler C and others (2007b). 'The ORION statement: Guidelines for Transparent Reporting of Outbreak Reports and Intervention studies Of Nosocomial infection' Journal of Antimicrobial Chemotherapy, volume 59, pages 833 to 840
58. Strimling MO, Sacho H and Berkowitz I (1989). '*Clostridium difficile* infection in health-care workers' Lancet volume 2, pages 866 to 867
59. Whitaker J, Brown BS, Vidal S and Calcaterra M (2007). 'Designing a protocol that eliminates *Clostridium difficile*: a collaborative venture' American Journal of Infectious Control, volume 35, pages 310 to 314
60. Wilcox MH and Fawley WN (2007). 'Viral gastroenteritis increases the reports of *Clostridium difficile* infection' Journal of Hospital Infection, volume 66, pages 395 to 396
61. Wilcox MH, Fawley WN, Wigglesworth N and others (2003). 'Comparison of the effect of detergent versus hypochlorite cleaning on environmental contamination and incidence of *Clostridium difficile* infection' Journal of Hospital Infection, volume 54, pages 109 to 114
62. Wilcox MH, Mooney L, Bendall R and others (2008). 'A case-control study of community-associated *Clostridium difficile* infection' Journal of Antimicrobial Chemotherapy advance access, published online 22 April 2008
63. World Health Organization (2005). 'WHO Guidelines on Hand Hygiene in Health Care (Advanced Draft)'
64. Yearsley KA, Gilby LJ, Ramadas AV and others (2006). 'Proton pump inhibitor therapy is a risk factor for *Clostridium difficile*-associated diarrhoea' Alimentary Pharmacology and Therapeutics volume 24, pages 613 to 619

About the UK Health Security Agency

UK Health Security Agency (UKHSA) prevents, prepares for and responds to infectious diseases, and environmental hazards, to keep all our communities safe, save lives and protect livelihoods. We provide scientific and operational leadership, working with local, national and international partners to protect the public's health and build the nation's health security capability.

UKHSA is an executive agency, sponsored by the Department of Health and Social Care.

Version 3.1

For queries relating to this document, please contact: HCAIAMR.IOIG@ukhsa.gov.uk

Published: June 2026
Publishing reference: GOV-21265

UKHSA supports the Sustainable Development Goals