UK Health Security Agency

Effectiveness of additional infection prevention and control measures in preventing spread of *Clostridioides difficile* in periods of high prevalence in health and social care settings where care is provided

A rapid systematic review

Contents

Main messages

1. This rapid systematic review (search up to 1 September 2025) aimed to identify and summarise evidence relating to infection prevention and control measures, in addition to standard infection prevention and control practice, to prevent spread of *Clostridioides difficile* (*C. difficile)* or impact on patient outcomes, in the context of high prevalence in health and social care settings where care is provided.

2. In total, 1,425 records from 4 databases were screened; however, no relevant studies were identified for inclusion in this review.

3. In summary, no experimental studies (including randomised-controlled trials or quasi-experimental studies), observational studies (including comparative cohort studies, before-and-after studies, cross-sectional studies, case-control studies and cross-over studies) published or available as preprint were identified that reported on effectiveness of additional infection prevention and control measures, added above the standard infection prevention and control practice, in the context of high prevalence on preventing spread of *C. difficile* or their impact on patient outcomes.

Purpose

The purpose of this rapid systematic review was to identify and summarise the available evidence on the effectiveness of additional infection prevention control measures that can be added to standard measures to prevent the spread of *C. difficile* in the context of high prevalence of *C. difficile*.

The review question was:

1. What infection prevention and control measures, in addition to standard infection prevention and control practice, are effective in preventing spread of *C. difficile* in the context of high prevalence and what is their impact on patient outcomes in health and social care settings where care is provided?

This rapid systematic review was commissioned to help inform the update of UKHSA guidance on *C. difficile* infection: how to deal with the problem.

Methods

A rapid systematic review was conducted, following streamlined systematic methods to accelerate the review process and provide a timely, evidence-informed answer to the review question without compromising the rigour of the review process. A literature search was undertaken to look for relevant experimental studies including randomised-controlled trials, quasi-experimental studies and cross-over trials, observational studies including comparative cohort studies, before-and-after studies, cross-sectional studies and case-control studies, published or available as preprint, up to 1 September 2025. Four databases were searched: Ovid Medline, Ovid Embase, Ovid Emcare and Web of Science Preprint Citation Index.

This review included any evidence on infection prevention and control measures, in addition to standard infection prevention and control practice (as defined by the study authors), in the context of high prevalence *C.difficile* on preventing spread, or impact on patient outcomes. Study author definitions of a high prevalence of *C. difficile* were used to identify high prevalence contexts. Studies reporting a period of increased incidence of *C. difficile* were not considered as a high prevalence context.

The following settings were of interest for this review, as specified by subject matter experts: any setting where care (defined as care administered by health or social care professionals, not care of dependents) is given (hospitals, care homes with or without nursing, adult social care settings, outpatient and community care settings, mental health facilities and prisons) was included.

The outcomes of interest for this review were the onward transmission of *C. difficile* measured by: *C. difficile* incidence rate in the healthcare setting, *C. difficile* transmission rate in the healthcare setting, secondary *C. difficile* infection, prevalence of *C. difficile*, *C. difficile* relapse, *C. difficile* recurrence, length of hospital stay, mortality.

A protocol was produced before the literature search was conducted, including the review question, the eligibility criteria, and all other methods. Full details of the methodology are provided in the protocol in Annexe A. The protocol was reviewed by the ‘How to deal with the problem' working group 2025 and was also prospectively published on Prospero (an international database for the prospective registration of systematic reviews) registration number: 420251174462. There were no deviations from the protocol.

Screening on title and abstract was undertaken in duplicate by 2 reviewers for 20% of the eligible studies, with the remainder completed by one reviewer. Screening on full text was undertaken by one reviewer and checked by a second.

Evidence

In total, 1,425 studies were screened at title and abstract and 59 studies were screened at full text. Of these, no studies met the inclusion criteria. A PRISMA diagram showing the flow of studies through the review is shown in Annexe B, and studies excluded on full text screening are available with the reasons why in Annexe C. The main reasons for excluding records at full text review were 'wrong context' (n=27), where the majority of studies either did not specify the *C. difficile* context they were conducted in or were outbreak situations, and 'wrong intervention' (n=11) where the interventions were not infection prevention control measures implemented alongside standard *C. difficile* infection prevention practices. Backwards and forwards citation searching of primary studies was not conducted, as no studies were included at full text screening stage.

Health inequalities

The following demographic and social factors were considered as of interest for this review in relation to potential health inequality risks: socio-economic status, age, sex, race, and ethnicity. However, as no studies were identified for inclusion in this review, health inequalities could not be assessed.

Limitations

This rapid systematic review used streamlined systematic methods to accelerate the review process. Sources of evidence searched included databases of peer-reviewed and preprint research, but an extensive search of other sources was not conducted and most article screening was completed without duplication, so it is possible relevant evidence may have been missed.

Evidence gaps

No studies were identified for inclusion in this review highlighting an evidence gap relating to additional infection prevention control measures that can be added to standard measures in the context of a high prevalence of *C. difficile*.

Conclusion

The aim of this review was to identify and assess available evidence relating to the effectiveness of infection prevention and control infection prevention and control measures, in addition to standard infection prevention and control practice, in preventing spread of *C. difficile* in the context of high prevalence. However, no relevant evidence (from experimental studies, observational studies, before-and-after studies, cross-sectional studies, case-control studies, or cross-over designs) was identified and therefore this review is unable to inform on infection prevention and control measures in the context of high prevalence *C. difficile*.

Acknowledgments

We would like to thank colleagues within the All Hazards Public Health Response division who either reviewed or input into aspects of the review.

Disclaimer

UKHSA's rapid systematic reviews and evidence summaries aim to provide the best available evidence to decision makers in a timely and accessible way, based on published peer-reviewed scientific papers, and papers on preprint servers. Note that the reviews:

- use accelerated methods and may not be representative of the whole body of evidence publicly available
- have undergone an internal independent peer review but not an external peer review
- are only valid as of the date stated on the review

In the event that this review is shared externally, note additionally, to the greatest extent possible under any applicable law, that UKHSA accepts no liability for any claim, loss or damage arising out of, or connected with the use of, this review by the recipient or any third party including that arising or resulting from any reliance placed on, or any conclusions drawn from, the review.

References

1. JBI. 'Critical appraisal tools' 2020
2. The GRADE Working Group. 'GRADE handbook for grading quality of evidence and strength of recommendations' 2013

Annexe A. Protocol

The review question is:

1. What infection prevention and control measures, in addition to standard infection prevention and control practice, are effective in preventing spread of *C. difficile* in the context of high prevalence and what is their impact on patient outcomes?

A search for primary evidence to answer this review question will be conducted up to 1 September 2025.

Eligibility criteria

Table A.1. Inclusion and exclusion criteria

	Included	Excluded
Population	Adults and children (over 2 years old) with confirmed or suspected *C. difficile* [note 1]	Children under the age of 2
Context	To inform guidance for health and social care settings in cases of *C.difficile* outbreaks, clusters, periods of increased incidence, areas of high prevalence or single cases	
Settings	Any setting where care [note 2] is given, including: • hospitals • care homes with or without nursing • adult social care settings • outpatient and community care settings • mental health facilities • prisons	
Intervention or exposure	Infection prevention and control measures, additional to standard *C. difficile* infection prevention and control practice [note 3] in the context of high prevalence [note 4]	Standard *C. difficile* infection prevention and control practice only
Comparator	Standard practice with no additional measures	

	Included	**Excluded**
Outcomes	• *C.difficile* incidence rate in the healthcare setting • *C.difficile* transmission rate in the healthcare setting • secondary *C. difficile* infection • prevalence of *C. difficile* • *C. difficile* relapse • *C. difficile* recurrence • length of hospital stay • mortality	
Language	English	Any other language
Date of publication	Up to 1 September 2025	
Study design	Experimental studies including randomised-controlled trials and quasi-experimental studies Observational studies including comparative cohort studies Before-and-after studies Cross-sectional studies Case-control studies Cross-over designs	Reviews (all types) Descriptive studies including case series or case reports Modelling studies Qualitative research Mixed methods
Publication type	Peer-reviewed published research Preprints	Conference abstracts Editorials Letters News articles Other grey literature

note 1 Including symptomatic PCR positive, toxin negative patients
note 2 ‘Care’ was defined as care administered by health or social care professionals (not care of dependents)
note 3 Standard infection prevention control practice was based on the study author definition
note 4 Definition of high prevalence was based on the study author definition (a period of increased incidence was not considered as ‘high prevalence’)

Background

This protocol is part of a series of reviews commissioned to support the updating the Infection Prevention and Control section of the following guideline: *Clostridioides difficile* infection: how to deal with the problem.

Identification of studies

The following databases will be searched for studies published up to 1 September 2025: Ovid Medline, Ovid Embase, Ovid Emcare and Web of Science Preprint Citation Index. The search strategy is presented below.

Backwards and forwards citation searching of primary studies included during full text screening will be carried out by searching Lens.org via CitationChaser. References that are included following full text screening will be used as seed references.

Screening

Title and abstract screening will be undertaken in duplicate by 2 reviewers for at least 20% of the eligible studies, with the remainder completed by one reviewer. Disagreement will be resolved by discussion or with involvement of a third reviewer where necessary.

Screening on full text will be undertaken by one reviewer and checked by a second.

Data extraction

Summary information for each study will be extracted and reported in tabular form. Information to be extracted will include country, study period, study design, intervention, participants, results, and any relevant contextual data. This will be undertaken by one reviewer and checked by a second.

Risk of bias assessment

We will perform risk of bias assessment at the primary study level using the relevant JBI checklist (1). Risk of bias will be assessed by 2 reviewers independently with disagreements resolved through discussion or with a third reviewer.

Certainty of evidence

If appropriate, the certainty of evidence identified within this review will be assessed using a modified version of the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) framework (2).

Certainty of evidence will be assessed at the outcome level, and be rated as one of 4 levels:

- very low (the true effect is probably different from the estimated effect)
- low (the true effect might be different from the estimated effect)
- moderate (the true effect is probably close to the estimated effect)
- high (the authors are confident that the true effect is similar to the estimated effect)

The certainty of evidence will be assessed by one reviewer (and checked by a second) for each outcome across 4 domains:

1. Risk of bias: where results may not represent the true effect because of limitations in the design or conduct of the study.
2. Inconsistency: where studies show different effects for the same outcome of interest (only assessed where there are 2 or more studies measuring the same outcome). Inconsistency will be rated down if, for example, the point estimates are not similar, or the confidence intervals do not overlap, heterogeneity will be considered.
3. Indirectness: where elements of the study differ from the intended elements in the review question (for example, the outcome of interest has not been directly measured). This will be rated down if the population, intervention, comparator, or outcome of interest have not been directly measured.
4. Imprecision: a measure of how uncertain the estimate is. Imprecision will be rated down if the confidence intervals cross the line of no effect, or if the reviewer judges that the confidence intervals are overly wide and so the true effect is likely to be different at the upper versus the lower end of the confidence interval.

Publication bias will not be used to assess the quality of the evidence in this review.

Evidence may be downgraded one or 2 levels following the assessment of quality or upgraded if there is a large magnitude of effect or clear dose-response gradient.

Synthesis

Where studies are similar enough to combine and present data in a consistent format, a narrative synthesis will be produced to interpret the findings. The narrative synthesis will include: the number of studies, the number of participants in each study, effect size and variance and a summary of study limitations across studies reporting each outcome will be

summarised and presented. Alternatively, if studies present methodological differences that would make synthesis inappropriate, a narrative summary of each study will be provided.

Health inequalities

Variations among individuals experiencing health inequalities will be reported as part of the evidence synthesis, as these factors may influence outcomes for *Clostridioides difficile* infections: socio-economic status, sex, race, and ethnicity. Differences in outcomes by age and any variation or disparities between settings (for example, health care or social care) will also be assessed if the data are available.

Search strategy

Ovid MEDLINE(R) ALL (1946 to 25 July 2025)

1. exp Clostridioides difficile/ (12,266)
2. exp Clostridium Infections/ (33,939)
3. clostridium difficile.tw,kf. (15,548)
4. clostridioides difficile.tw,kf. (5,117)
5. clostrid* infection*.tw,kf. (549)
6. C difficile.tw,kf. (9,811)
7. "C.difficile".tw,kf. (106)
8. C diff.tw,kf. (219)
9. "C.diff".tw,kf. (102)
10. CDAD.tw,kf. (773)
11. CDI.tw,kf. (10,281)
12. or/1-11 (49,056)
13. ((high* or heighten* or increas* or elevate*) adj3 (prevalence or prevalent or incidence* or rate* or case* or burden or transmit* or transmission or risk*)).tw,kf. (2,619,140)
14. (widespread or "wide spread").tw,kf. (258,249)
15. out$break*.tw,kf. (158,785)
16. or/13-15 (2,979,061)
17. ((standard* or routine or usual or conventional) adj4 (practice* or precaution* or prevention* or procedure* or protocol* or management or guideline* or care)).tw,kf. (376,668)
18. ("transmission based" adj2 (precaution* or prevention* or intervention*)).tw,kf. (192)
19. (contact adj3 (transmission or precaution*)).tw,kf. (3,209)
20. ((additional or added or enhance* or augment* or elevate* or target* or intense or intensif* or special*) adj4 (measure* or intervention* or response* or control* or protocol* or surveillance)).tw,kf. (401,442)

21. (above adj2 standard adj3 (practice* or precaution* or prevention* or procedure* or protocol* or management or guideline* or care)).tw,kf. (54)
22. ((additional or added or enhance* or augment* or elevate* or target* or intense or intensif* or increase* or special*) adj3 (clean* or disinfect* or decontaminat* or wash* or sanitis* or sanitiz* or sanitation or sterilis* or steriliz*)).tw,kf. (8,574)
23. exp Patient Isolation/ (4,602)
24. segregat*.tw,kf. (93,599)
25. cohorting.tw,kf. (635)
26. cohort ward*.tw,kf. (30)
27. (dedicate* adj3 ward*).tw,kf. (218)
28. ((patient* or strateg* or protocol* or precaution*) adj3 isolat*).tw,kf. (72,019)
29. individual room*.tw,kf. (68)
30. side room*.tw,kf. (87)
31. single room*.tw,kf. (816)
32. en$suite*.tw,kf. (1,215)
33. Cohort bay*.tw,kf. (21)
34. single-bed room*.tw,kf. (59)
35. single patient room*.tw,kf. (67)
36. private room*.tw,kf. (483)
37. spatial separat*.tw,kf. (2,613)
38. exp Bathroom Equipment/ (253)
39. exp Toilet Facilities/ (2,053)
40. ((dedicated or separate or individual or private) adj toilet*).tw,kf. (49)
41. isolation facilit*.tw,kf. (392)
42. cohort area*.tw,kf. (297)
43. isolation room*.tw,kf. (686)
44. isolation area*.tw,kf. (109)
45. exp Patient Transfer/ (10,271)
46. exp "Transportation of Patients"/ (18,933)
47. (restrict* adj3 (movement or moving or transport* or transfer*) adj3 patient*).tw,kf. (167)
48. (patient* adj2 placement*).tw,kf. (5,063)
49. (movement* adj2 (patient* or polic* or strateg* or protocol* or precaution*)).tw,kf. (7,376)
50. (patient* adj2 (transfer* or transfer* or mov* or flow)).tw,kf. (32,303)
51. staff cohorting.tw,kf. (20)
52. fluid resistant surgical mask*.tw,kf. (7)
53. ((disposable or single-use) adj (equipment or device* or item* or commode* or thermometer* or utensil* or apron* or glove* or mask* or scrub*)).tw,kf. (1,737)
54. or/17-53 (1,012,994)
55. 12 and 16 and 54 (640)
56. limit 55 to (comment or editorial or letter or news or newspaper article) (4)
57. 55 not 56 (636)

Embase (1974 to 14 August 2025)

1. exp Clostridioides difficile/ (22,719)
2. exp Clostridium infection/ (48,491)
3. clostridium difficile.tw,kf. (23,809)
4. clostridioides difficile.tw,kf. (6,931)
5. clostrid* infection*.tw,kf. (640)
6. C difficile.tw,kf. (14,901)
7. "C.difficile".tw,kf. (538)
8. C diff.tw,kf. (1,129)
9. "C.diff".tw,kf. (380)
10. CDAD.tw,kf. (1,361)
11. CDI.tw,kf. (16,501)
12. or/1-11 (76,884)
13. ((high* or heighten* or increas* or elevate*) adj3 (prevalence or prevalent or incidence* or rate* or case* or burden or transmit* or transmission or risk*)).tw,kf. (3,875,950)
14. (widespread or "wide spread").tw,kf. (320,359)
15. out$break*.tw,kf. (172,992)
16. or/13-15 (4,294,106)
17. ((standard* or routine or usual or conventional) adj4 (practice* or precaution* or prevention* or procedure* or protocol* or management or guideline* or care)).tw,kf. (661,642)
18. ("transmission based" adj2 (precaution* or prevention* or intervention*)).tw,kf. (290)
19. (contact adj3 (transmission or precaution*)).tw,kf. (4,148)
20. ((additional or added or enhance* or augment* or elevate* or target* or intense or intensif* or special*) adj4 (measure* or intervention* or response* or control* or protocol* or surveillance)).tw,kf. (553,176)
21. (above adj2 standard adj3 (practice* or precaution* or prevention* or procedure* or protocol* or management or guideline* or care)).tw,kf. (118)
22. ((additional or added or enhance* or augment* or elevate* or target* or intense or intensif* or increase* or special*) adj3 (clean* or disinfect* or decontaminat* or wash* or sanitis* or sanitiz* or sanitation or sterilis* or steriliz*)).tw,kf. (11,085)
23. exp patient isolation/ (2,778)
24. segregat*.tw,kf. (107,566)
25. cohorting.tw,kf. (973)
26. cohort ward*.tw,kf. (54)
27. (dedicate* adj3 ward*).tw,kf. (413)
28. ((patient* or strateg* or protocol* or precaution*) adj3 isolat*).tw,kf. (104,706)
29. individual room*.tw,kf. (105)
30. side room*.tw,kf. (172)
31. single room*.tw,kf. (1,211)

32. en$suite*.tw,kf. (238)
33. Cohort bay*.tw,kf. (34)
34. single-bed room*.tw,kf. (83)
35. single patient room*.tw,kf. (98)
36. private room*.tw,kf. (1,004)
37. spatial separat*.tw,kf. (2,512)
38. exp bathroom equipment/ (18,698)
39. exp sanitation/ (627,580)
40. ((dedicated or separate or individual or private) adj toilet*).tw,kf. (77)
41. isolation facilit*.tw,kf. (498)
42. cohort area*.tw,kf. (374)
43. isolation room*.tw,kf. (1,046)
44. isolation area*.tw,kf. (164)
45. exp patient transport/ (37,802)
46. (restrict* adj3 (movement or moving or transport* or transfer*) adj3 patient*).tw,kf. (252)
47. (patient* adj2 placement*).tw,kf. (9,622)
48. (movement* adj2 (patient* or polic* or strateg* or protocol* or precaution*)).tw,kf. (11,596)
49. (patient* adj2 (transfer* or transfer* or mov* or flow)).tw,kf. (60,240)
50. staff cohorting.tw,kf. (33)
51. fluid resistant surgical mask*.tw,kf. (8)
52. ((disposable or single-use) adj (equipment or device* or item* or commode* or thermometer* or utensil* or apron* or glove* or mask* or scrub*)).tw,kf. (2,520)
53. or/17-52 (2,140,518)
54. 12 and 16 and 53 (1,868)
55. limit 54 to (conference abstract or conference paper or "conference review" or editorial or letter) (695)
56. 54 not 55 (1,173)

Web of Science Preprint Citation Index (1991 to 14 August 2025)

TS=("Clostridioides difficile") OR TS=("Clostridium infection*") OR TS=("clostridium difficile") OR TS=("C diff*") OR TS=("C.diff*") OR TS=(CDAD)

AND

TS=(high* NEAR/3 prevalence or prevalent or incidence* or rate* or case* or burden or transmit* or transmission or risk*) OR TS=(heighten* NEAR/3 prevalence or prevalent or incidence* or rate* or case* or burden or transmit* or transmission or risk*) OR TS=(increas* NEAR/3 prevalence or prevalent or incidence* or rate* or case* or burden or transmit* or transmission or risk*) OR TS=(elevate* NEAR/3 prevalence or prevalent or incidence* or

rate* or case* or burden or transmit* or transmission or risk*) OR TS=(widespread or "wide spread" or outbreak or "out break")

AND

TS=(standard* NEAR/4 practice* or precaution* or prevention* or procedure* or protocol* or management or guideline* or care) OR TS=(routine NEAR/4 practice* or precaution* or prevention* or procedure* or protocol* or management or guideline* or care) OR TS=(usual NEAR/4 practice* or precaution* or prevention* or procedure* or protocol* or management or guideline* or care) OR TS=(conventional NEAR/4 practice* or precaution* or prevention* or procedure* or protocol* or management or guideline* or care) OR TS=("transmission based" NEAR/2 precaution* or prevention* or intervention*) OR TS=(contact NEAR/3 transmission or precaution*) OR TS=(additional NEAR/4 measure* or intervention* or response* or control* or protocol* or surveillance) OR TS=(added NEAR/4 measure* or intervention* or response* or control* or protocol* or surveillance) OR TS=(enhance* NEAR/4 measure* or intervention* or response* or control* or protocol* or surveillance) OR TS=(augment* NEAR/4 measure* or intervention* or response* or control* or protocol* or surveillance) OR TS=(elevate* NEAR/4 measure* or intervention* or response* or control* or protocol* or surveillance) OR TS=(target* NEAR/4 measure* or intervention* or response* or control* or protocol* or surveillance) OR TS=(intens* NEAR/4 measure* or intervention* or response* or control* or protocol* or surveillance) OR TS=(special* NEAR/4 measure* or intervention* or response* or control* or protocol* or surveillance) OR TS=(above NEAR/2 standard NEAR/3 practice* or precaution* or prevention* or procedure* or protocol* or management or guideline* or care) OR TS=(additional NEAR/3 clean* or disinfect* or decontaminat* or wash* or sanitis* or sanitiz* or sanitation or sterilis* or steriliz*) OR TS=(added NEAR/3 clean* or disinfect* or decontaminat* or wash* or sanitis* or sanitiz* or sanitation or sterilis* or steriliz*) OR TS=(enhance* NEAR/3 clean* or disinfect* or decontaminat* or wash* or sanitis* or sanitiz* or sanitation or sterilis* or steriliz*) OR TS=(augment* NEAR/3 clean* or disinfect* or decontaminat* or wash* or sanitis* or sanitiz* or sanitation or sterilis* or steriliz*) OR TS=(elevate* NEAR/3 clean* or disinfect* or decontaminat* or wash* or sanitis* or sanitiz* or sanitation or sterilis* or steriliz*) OR TS=(target* NEAR/3 clean* or disinfect* or decontaminat* or wash* or sanitis* or sanitiz* or sanitation or sterilis* or steriliz*) OR TS=(intens* NEAR/3 clean* or disinfect* or decontaminat* or wash* or sanitis* or sanitiz* or sanitation or sterilis* or steriliz*) OR TS=(increase* NEAR/3 clean* or disinfect* or decontaminat* or wash* or sanitis* or sanitiz* or sanitation or sterilis* or steriliz*) OR TS=(special* NEAR/3 clean* or disinfect* or decontaminat* or wash* or sanitis* or sanitiz* or sanitation or sterilis* or steriliz*) OR TS=(isolat*) OR TS=(“patient isolation”) OR TS=(segregat*) OR TS=(cohorting) OR TS=(“cohort ward*”) OR TS=(“cohort area*”) OR TS=(“cohort bay*”) OR TS=(“individual room*”) OR TS=(“side room*”) OR TS=("single room*”) OR TS=(ensuite*) OR TS=(“single*-bed room*”) OR TS=(“Single patient room*”) OR TS=(“Private room*”) OR TS=(“Spatial separat*”) OR TS=(“dedicated toilet*”) OR TS=(“separate toilet*”) OR TS=(“individual toilet*”) OR TS=(“isolation facilit*”) OR TS=(“isolation room*”) OR TS=(“isolation area*”) OR TS=(“bathroom equipment”) OR

TS=(“dedicated toilet*”) OR TS=(“toilet facility*”) OR TS=(“separate* toilet*”) OR TS=(“patient trans*”) OR TS=(restrict* NEAR/3 (movement or moving or transport* or transfer*)) OR TS=(patient* NEAR/2 placement*) OR TS=(movement* NEAR/2 (patient* or polic* or strateg* or protocol* or precaution*)) OR TS=(disposable NEAR/2 equipment or device* or item* or commode* or thermometer* or utensil* or apron* or glove* or mask* or scrub*) OR TS=("single use" NEAR/2 equipment or device* or item* or commode* or thermometer* or utensil* or apron* or glove* or mask* or scrub*)

120 results

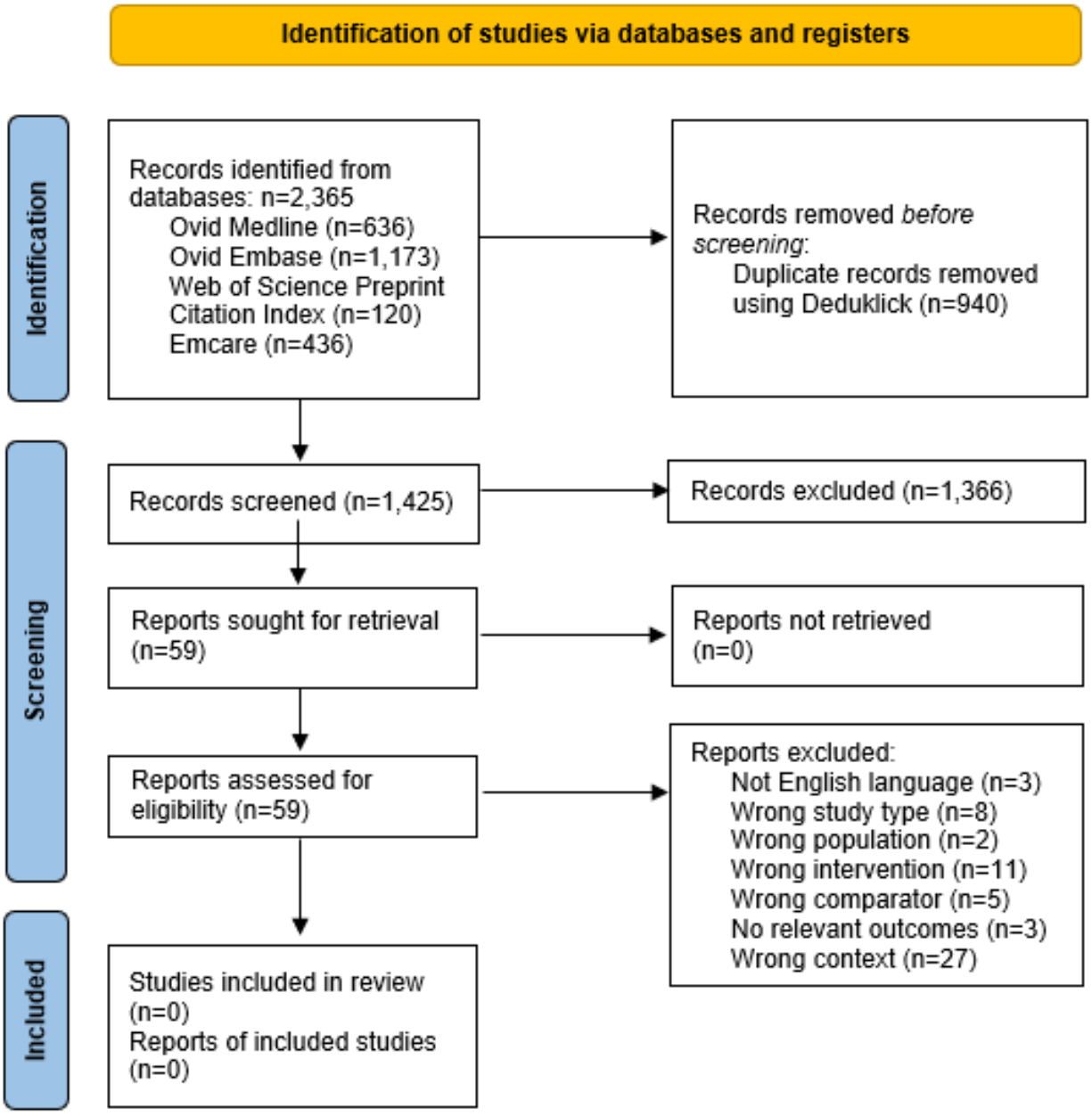
Ovid Emcare (1995 to Week 32 2025)

1. exp Clostridioides difficile/ (1,741)
2. exp Clostridium infection/ (12,167)
3. clostridium difficile.tw,kf. (4,538)
4. clostridioides difficile.tw,kf. (1,547)
5. clostrid* infection*.tw,kf. (93)
6. C difficile.tw,kf. (2,477)
7. "C.difficile".tw,kf. (49)
8. C diff.tw,kf. (110)
9. "C.diff".tw,kf. (16)
10. CDAD.tw,kf. (269)
11. CDI.tw,kf. (3,298)
12. or/1-11 (16,760)
13. ((high* or heighten* or increas* or elevate*) adj3 (prevalence or prevalent or incidence* or rate* or case* or burden or transmit* or transmission or risk*)).tw,kf. (932,815)
14. (widespread or "wide spread").tw,kf. (68,482)
15. out$break*.tw,kf. (43,958)
16. or/13-15 (1,027,144)
17. ((standard* or routine or usual or conventional) adj4 (practice* or precaution* or prevention* or procedure* or protocol* or management or guideline* or care)).tw,kf. (169,571)
18. ("transmission based" adj2 (precaution* or prevention* or intervention*)).tw,kf. (135)
19. (contact adj3 (transmission or precaution*)).tw,kf. (1,207)
20. ((additional or added or enhance* or augment* or elevate* or target* or intense or intensif* or special*) adj4 (measure* or intervention* or response* or control* or protocol* or surveillance)).tw,kf. (143,456)
21. (above adj2 standard adj3 (practice* or precaution* or prevention* or procedure* or protocol* or management or guideline* or care)).tw,kf. (24)
22. ((additional or added or enhance* or augment* or elevate* or target* or intense or intensif* or increase* or special*) adj3 (clean* or disinfect* or decontaminat* or wash* or sanitis* or sanitiz* or sanitation or sterilis* or steriliz*)).tw,kf. (2,400)

23. exp patient isolation/(1,173)
24. segregat*.tw,kf. (13,469)
25. cohorting.tw,kf. (350)
26. cohort ward*.tw,kf. (16)
27. (dedicate* adj3 ward*).tw,kf. (104)
28. ((patient* or strateg* or protocol* or precaution*) adj3 isolat*).tw,kf. (17,895)
29. individual room*.tw,kf. (32)
30. side room*.tw,kf. (35)
31. single room*.tw,kf. (459)
32. en$suite*.tw,kf. (195)
33. Cohort bay*.tw,kf. (6)
34. single-bed room*.tw,kf. (37)
35. single patient room*.tw,kf. (47)
36. private room*.tw,kf. (338)
37. spatial separat*.tw,kf. (409)
38. exp bathroom equipment/ (6,084)
39. exp sanitation/ (87,342)
40. ((dedicated or separate or individual or private) adj toilet*).tw,kf. (28)
41. isolation facilit*.tw,kf (159)
42. cohort area*.tw,kf. (123)
43. isolation room*.tw,kf. (391)
44. isolation area*.tw,kf.(48)
45. exp patient transport/ (17,761)
46. (restrict* adj3 (movement or moving or transport* or transfer*) adj3 patient*).tw,kf. (75)
47. (patient* adj2 placement*).tw,kf. (2,158)
48. (movement* adj2 (patient* or polic* or strateg* or protocol* or precaution*)).tw,kf. (3,431)
49. (patient* adj2 (transfer* or transfer* or mov* or flow)).tw,kf. (15,404)
50. staff cohorting.tw,kf. (12)
51. fluid resistant surgical mask*.tw,kf. (2)
52. ((disposable or single-use) adj (equipment or device* or item* or commode* or thermometer* or utensil* or apron* or glove* or mask* or scrub*)).tw,kf. (678)
53. or/17-52 (462,294)
54. 12 and 16 and 53 (436)

Annexe B. Study selection flowchart

Figure B.1. PRISMA diagram



Text version of Figure B.1. PRISMA diagram

A PRISMA diagram showing the flow of studies through this review, ultimately including 0 studies.

From identification of studies via databases and registers, n=2,365 records identified from databases:

- Ovid Medline (n=636)
- Ovid Embase (n=1,173)
- Web of Science (n=120)
- Embase (n=436)

From these, records removed before screening:

- duplicate records removed using Deduklick (n=940)

n=1,425 records screened, of which n=1,366 were excluded, leaving n=59 papers sought for retrieval, of which n=0 were not retrieved.

Of the n=59 papers assessed for eligibility, n=59 reports were excluded:

- not English language (n=3)
- wrong study type (n=8)
- wrong population (n=2)
- wrong intervention (n=11)
- wrong comparator (n=5)
- no relevant outcomes (n=3)
- wrong context (n=27)

n=0 papers included in the review.

Annexe C. Excluded full texts

Not English language (3 studies)

Equiluz-Bruck S and others. 'Outbreak of *clostridium difficile* PCR ribotype 027 in a surgical unit' Hygiene + Medizin 2010: volume 35, issue 5, pages 161 to 164

Kawakami K and others. 'Effectiveness of computerized decision support program for isolation precautions against infection control practices and health care-associated infections' Japanese Journal of Environmental Infections 2016: volume 31, issue 4, pages 230 to 234

Mattner F and others. 'Successful bundle of prevention measures against a high CDAD incidence at a university hospital' Hygiene + Medizin 2008: volume 33, issue 9, pages 346 to 352

Wrong study type (8 studies)

Jakobs F and others. 'A budget impact analysis of bezlotoxumab versus standard of care antibiotics only in patients at high risk of CDI recurrence from a hospital management perspective in Germany' BMC Health Services Research 2021: volume 21, issue 1, page 939

Khanafer N and others. 'Factors Associated with *Clostridioides (Clostridium) Difficile* Infection and Colonization: Ongoing Prospective Cohort Study in a French University Hospital' International Journal of Environmental Research and Public Health 2021: volume 18, issue 14

Kumar P and others. 'Method for Economic Evaluation of Bacterial Whole Genome Sequencing Surveillance Compared to Standard of Care in Detecting Hospital Outbreaks' Clinical Infectious Diseases 2021: volume 73, issue 1, pages E9 to E18

Martin AJ and others. 'Simultaneous control of norovirus and *Clostridium difficile* outbreaks due to enhanced infection prevention and control measures' Journal of Hospital Infection 2008: volume 68, issue 2, pages 180 to 181

Nagar A and others. 'Report of an outbreak of *Clostridium difficile* infection caused by ribotype 053 in a neurosurgery unit' Journal of Infection Prevention 2015: volume 16, issue 3, pages 126 to 130

Rosenberg K. 'Fecal Microbiota Transplantation is Safe and Effective for *C. Difficile* Infection' The American Journal of Nursing 2021: volume 121, issue 1, page 56

Savage TJ and others. '*Clostridioides difficile* Infection in Children: The Role of Infection Prevention and Antimicrobial Stewardship' Journal of the Pediatric Infectious Diseases Society 2021: volume 10, issue Supplement 3, pages S64 to S68

Weber DJ and others. 'Role of hospital surfaces in the transmission of emerging health care-associated pathogens: Norovirus, *Clostridium difficile*, and Acinetobacter species' American Journal of Infection Control 2010: volume 38, issue 5 Supplement, pages S25 to S33

Wrong intervention (11 studies)

Alfa MJ and others. 'Improved eradication of *Clostridium difficile* spores from toilets of hospitalized patients using an accelerated hydrogen peroxide as the cleaning agent' BMC Infectious Diseases 2010: volume 10, page 268

Baker MA and others. 'Automated outbreak detection of hospital-associated pathogens: Value to infection prevention programs' Infection Control and Hospital Epidemiology 2020: volume 41, issue 9, pages 1,016 to 1,021

Boyce JM and others. 'Impact of hydrogen peroxide vapor room decontamination on *Clostridium difficile* environmental contamination and transmission in a healthcare setting' Infection Control and Hospital Epidemiology 2008: volume 29, issue 8, pages 723 to 729

Chung P and others. 'Investigation to identify a resource-efficient case-control methodology for determining antibiotics associated with *Clostridium difficile* infection' American Journal of Infection Control 2014: volume 42, issue 10 Supplement, pages S264 to 268

Felsen CB and others. 'Reducing Fluoroquinolone Use and *Clostridioides difficile* Infections in Community Nursing Homes Through Hospital-Nursing Home Collaboration' Journal of the American Medical Directors Association 2020: volume 21, issue 1, pages 55 to 61.E2

Khanna S and others. 'Efficacy and Safety of RBX2660 in PUNCH CD3, a Phase III, Randomized, Double-Blind, Placebo-Controlled Trial with a Bayesian Primary Analysis for the Prevention of Recurrent *Clostridioides difficile* Infection' Drugs 2022: volume 82, issue 15, pages 1,527 to 1,538

Nakaie K and others. 'Three-year epidemiological analysis of *Clostridioides difficile* infection and the value of hospital-infection control measures in a tertiary-care teaching hospital in Japan using PCR-based open-reading frame typing' Journal of Infection and Chemotherapy: Official Journal of the Japan Society of Chemotherapy 2021: volume 27, issue 2, pages 179 to 184

Rooney AM and others. 'Alterations in intestinal Proteobacteria and antimicrobial resistance gene burden in individuals administered microbial ecosystem therapeutic (MET-2) for recurrent *Clostridioides difficile* infection' bioRxiv 2022

Rubak T and others. 'Early geriatric assessment and management in older patients with *Clostridioides difficile* infection in Denmark (CLODIfrail): a randomised trial' The Lancet. Healthy Longevity 2024: volume 5, issue 12, 100648

Simor AE and others. 'Prevalence of colonization and infection with methicillin-resistant Staphylococcus aureus and vancomycin-resistant Enterococcus and of *Clostridium difficile* infection in Canadian hospitals' Infection Control and Hospital Epidemiology 2013: volume 34, issue 7, pages 687 to 693

Taylor G and others. 'Assessing the magnitude and trends in hospital acquired infections in Canadian hospitals through sequential point prevalence surveys' Antimicrobial Resistance and Infection Control 2016: volume 5, page 19

Wrong population (2 studies)

Kenneley IL. 'Infection control and the home care environment' Home Health Care Management and Practice 2010: volume 22, issue 3, pages 195 to 201

Nace David A and others. 'A Multifaceted Antimicrobial Stewardship Program for the Treatment of Uncomplicated Cystitis in Nursing Home Residents' JAMA Internal Medicine 2020: volume 180, issue 7, pages 944 to 951

Wrong context (27 studies)

Aldeyab MA and others. 'Multihospital outbreak of *Clostridium difficile* ribotype 027 infection: epidemiology and analysis of control measures' Infection control and hospital epidemiology 2011: volume 32, issue 3, pages 210 to 219

Anderson DJ and others. 'Effectiveness of targeted enhanced terminal room disinfection on hospital-wide acquisition and infection with multidrug-resistant organisms and *Clostridium difficile*: a secondary analysis of a multicentre cluster randomised controlled trial with crossover design (BETR Disinfection)' The Lancet Infectious diseases 2018: volume 18, issue 8, pages 845 to 853

Arvand M and others. 'High prevalence of *Clostridium difficile* colonization among nursing home residents in Hesse, Germany' PLOS One 2012: volume 7, issue 1, e30183

Blanco N and others. 'Impact of a *C. difficile* infection (CDI) reduction bundle and its components on CDI diagnosis and prevention' American Journal of Infection Control 2021: volume 49, issue 3, pages 319 to 326

Cartmill TD and others. 'Management and control of a large outbreak of diarrhoea due to *Clostridium difficile*' The Journal of Hospital Infection 1994: volume 27, issue 1, pages 1 to 15

Cassir N and others. 'A Regional Outbreak of *Clostridium difficile* PCR-Ribotype 027 Infections in Southeastern France from a Single Long-Term Care Facility' Infection Control and Hospital Epidemiology 2016: volume 37, issue 11, pages 1,337 to 1,341

Debast SB and others. 'Successful combat of an outbreak due to *Clostridium difficile* PCR ribotype 027 and recognition of specific risk factors' Clinical Microbiology and Infection: the official publication of the European Society of Clinical Microbiology and Infectious Diseases 2009: volume 15, issue 5, pages 427 to 434

Doll ME and others. 'Chasing the rate: An interrupted time series analysis of interventions targeting reported hospital onset *Clostridioides difficile*, 2013-2018' Infection Control and Hospital Epidemiology 2020: volume 41, issue 10, pages 1,142 to 1,147

Drudy D and others. 'Emergence and control of fluoroquinolone-resistant, toxin A-negative, toxin B-positive *Clostridium difficile*' Infection Control and Hospital Epidemiology 2007: volume 28, issue 8, pages 932 to 940

Garcia-Lecona DA and others. 'Outcomes of *Clostridium difficile*-infected patients managed in a common isolation unit compared with isolation in their bed of diagnosis' American journal of infection control 2018: volume 46, issue 1, pages 103 to 104

Hacek DM and others. 'Significant impact of terminal room cleaning with bleach on reducing nosocomial *Clostridium difficile*' American Journal of Infection Control 2010: volume 38, issue 5, pages 350 to 353

Hardy K and others. 'Utilizing rapid multiple-locus variable-number tandem-repeat analysis typing to aid control of hospital-acquired *Clostridium difficile* Infection: a multicenter study' Journal of Clinical Microbiology 2012: volume 50, issue 10, pages 3,244 to 3,248

Hardy KJ and others. 'Reducing *Clostridium difficile* through early identification of clusters and the use of a standardised set of interventions' The Journal of Hospital Infection 2010: volume 75, issue 4, pages 277 to 281

Islam J and others. 'Influence of cohorting patients with *Clostridium difficile* infection on risk of symptomatic recurrence' The Journal of Hospital Infection 2013: volume 85, issue 1, pages 17 to 21

Kanamori H and others. 'Longitudinal trends in all healthcare-associated infections through comprehensive hospital-wide surveillance and infection control measures over the past 12 years: substantial burden of healthcare-associated infections outside of intensive care units and "other" types of infection' Infection Control and Hospital Epidemiology 2015: volume 36, issue 10, pages 1,139 to 1,147

McMullen KM and others. 'Use of hypochlorite solution to decrease rates of *Clostridium difficile*-associated diarrhea' Infection Control and Hospital Epidemiology 2007: volume 28, issue 2, pages 205 to 207

McNulty C and others. 'Successful control of *Clostridium difficile* infection in an elderly care unit through use of a restrictive antibiotic policy' The Journal of Antimicrobial Chemotherapy 1997: volume 40, issue 5, pages 707 to 711

Musuuza JS and others. 'Correlation of prevention practices with rates of health care-associated *Clostridioides difficile* infection' Infection Control and Hospital Epidemiology 2020: volume 41, issue 1, pages 52 to 58

Muto CA and others. 'Control of an outbreak of infection with the hypervirulent *Clostridium difficile* BI strain in a university hospital using a comprehensive "bundle" approach' Clinical Infectious Diseases: an official publication of the Infectious Diseases Society of America 2007: volume 45, issue 10, pages 1,266 to 1,273

Passaretti CL and others. 'An evaluation of environmental decontamination with hydrogen peroxide vapor for reducing the risk of patient acquisition of multidrug-resistant organisms' Clinical Infectious Diseases: an official publication of the Infectious Diseases Society of America 2013: volume 56, issue 1, pages 27 to 35

Price J and others. 'Impact of an intervention to control *Clostridium difficile* infection on hospital- and community-onset disease; an interrupted time series analysis' Clinical Microbiology and Infection: the official publication of the European Society of Clinical Microbiology and Infectious Diseases 2010: volume 16, issue 8, pages 1,297 to 1,302

Salgado CD and others. 'Analysis of an outbreak of *Clostridium difficile* infection controlled with enhanced infection control measures' American Journal of Infection control 2009: volume 37, issue 6, pages 458 to 464

Viti F and others. 'Analysis and Impact of Infection Prevention Procedures in Long-Term Care Facilities' Journal of Preventive Medicine and Hygiene 2025: volume 66, issue 1, pages E75 to E83

Walter C and others. 'An interprofessional approach to reducing hospital-onset *Clostridioides difficile* infections' American Journal of Infection Control 2022: volume 50, issue 12, pages 1,346 to 1,351

Wilcox MH and others. 'Bezlotoxumab for Prevention of Recurrent *Clostridium difficile* Infection' The New England Journal of Medicine 2017: volume 376, issue 4, pages 305 to 317

Witt LS and others. 'The role of the hospital bed in hospital-onset *Clostridioides difficile*: A retrospective study with mediation analysis' Infection Control and Hospital Epidemiology 2024: volume 45, issue 5, pages 599 to 603

You E and others. 'Reduction in the incidence of hospital-acquired *Clostridium difficile* infection through infection control interventions other than the restriction of antimicrobial use' International Journal of Infectious Diseases: IJID: official publication of the International Society for Infectious Diseases 2014: volume 22, pages 9 to 10

Wrong comparator (5 studies)

Domeniconi G and others. '*Clostridium difficile* infection epidemiology and management: Comparison of results of a prospective study with a retrospective one in a reference teaching and research hospital in Northern Italy' American Journal of Infection Control 2016: volume 44, issue 11, pages 1,214 to 1,218

Spagnolo AM and others. 'A *Clostridium difficile* outbreak in an Italian hospital: the efficacy of the multi-disciplinary and multifaceted approach' Journal of Preventive Medicine and Hygiene 2018: volume 59, issue 2, pages E132 to E138

Turner MC and others. 'Multidisciplinary Approach to *Clostridium difficile* Infection in Adult Surgical Patients' Journal of the American College of Surgeons 2019: volume 228, issue 4, pages 570 to 580

Unger JA and others. 'The emergence of *Clostridium difficile* infection among peripartum women: a case-control study of a C. difficile outbreak on an obstetrical service' Infectious Diseases in Obstetrics and Gynecology 2011: volume 2011, 267249

Valiquette L and others. 'Impact of a reduction in the use of high-risk antibiotics on the course of an epidemic of *Clostridium difficile*-associated disease caused by the hypervirulent NAP1/027 strain' Clinical Infectious Diseases: an official publication of the Infectious Diseases Society of America 2007: volume 45 Supplement 2, pages S112 to 121

No relevant outcomes (3 studies)

Kuenzli AB and others. 'Successful management of a *Clostridioides difficile* ribotype 027 outbreak with a lean intervention bundle' The Journal of Hospital Infection 2020: volume 106, issue 2, pages 240 to 245

Landelle C and others. 'Contamination of healthcare workers' hands with *Clostridium difficile* spores after caring for patients with *C. difficile* infection' Infection Control and Hospital Epidemiology 2014: volume 35, issue 1, pages 10 to 15

Resendiz M and others. 'Comparative effectiveness of rapid-cycle ultraviolet decontamination to chemical decontamination on high-touch communication devices' American Journal of Infection Control 2019: volume 47, issue 9, pages 1,135 to 1,139

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