UK Health Security Agency

Decontamination of household and community settings to prevent recurrence of Staphylococcal infection

A rapid systematic review

Contents

Main messages

1. This rapid systematic review (search up to 26 June 2024) identified and summarised evidence on strategies to decontaminate households and shared spaces in accommodation and community settings contaminated by one or more individuals affected by recurrent Staphylococcal skin and soft tissue infection to prevent recurrence.

2. In total, 6,416 primary studies were screened at title and abstract and 85 studies were screened at full text. One study, a randomised controlled trial, was identified for inclusion in this review (1).

3. In the randomised controlled trial (1), environmental swabs were taken from 13 'high-touch' areas (including bathroom floor, refrigerator handle and television remote control) in the homes of individuals presenting with symptoms of a skin or soft tissue infection. Participants were randomised to receive either usual care (incision and drainage plus oral antibiotics) plus environmental decontamination (instruction on washing bed linens and pillows every other day and disinfection of high-touch areas) and decolonisation (a 5-day protocol of twice-daily application of mupirocin antibacterial ointment and a daily whole-body wash with an antiseptic chlorohexidine gluconate solution), or usual care without additional intervention. Results showed no difference between the treatment groups in the proportion of homes with one or more areas contaminated with *Staphylococcal aureus*, before or 3-months after the intervention was administered.

4. The evidence had several limitations. The decontamination protocol was administered in combination with a decolonisation protocol and usual care, and so the effectiveness of the decontamination protocol only was not evaluated. Adherence to the environmental decontamination protocol was not measured, nor was the potential for the household to be decontaminated using other cleaning methods. Environmental samples were taken 3-months after the intervention was administered, rather than immediately following the initial decontamination and decolonisation protocols. Therefore, the immediate effectiveness of the intervention was not assessed.

5. An assessment of the certainty of the included evidence (how close the estimated effect might be to the true effect) at the outcome level was completed using a modified Grading of Recommendations, Assessment, Development and Evaluations (GRADE) approach (2). The proportion of households with one or more contaminated surface was assessed, and the certainty of evidence for this outcome was rated as low (the true effect might be different from the estimated effect). The rating for this outcome was downgraded as neither the participants nor those administering the intervention were blinded to treatment allocation, and the intervention was not rated as being sufficiently direct to that stated in the review question. Inconsistency and imprecision could not be assessed because of the limited data available.

6. In summary, one randomised controlled trial was identified for inclusion that compared the effectiveness of environmental decontamination and household decolonisation in combination with usual care, compared to usual care without additional intervention. There were no differences between the groups in the reduction of contaminated surfaces. However, the evidence is limited to one study, and the certainty of evidence using a modified GRADE approach was rated as low. The limitations of the evidence should be considered when interpreting the results from this review.

Purpose

The purpose of this rapid systematic review was to identify and assess the available evidence for strategies to decontaminate households and shared spaces in accommodation and community settings contaminated by one or more individuals affected by recurrent Staphylococcal skin and soft tissue infection (SSTI) to prevent recurrence.

For the purpose of this review, decontamination refers to the reduction or removal of staphylococcal infection from samples from the environment (such as changing room surfaces), from personal items (such as hairbrushes) or from pets or other animals.

There was one research question:

1. What is the most effective household or shared space decontamination method for an individual affected by recurrent Staphylococcal skin and soft tissue infection to prevent recurrence?

Methods

A rapid systematic review was conducted, following streamlined systematic methods to accelerate the review process. A literature search was undertaken to look for relevant interventional and observational studies, published or available as preprint, up to 26 June 2024. The reference lists of relevant reviews were checked to identify any additional primary studies.

A protocol was produced before the literature search was conducted, including the review question, the eligibility criteria, and all other methods. To answer the review question, the following context, intervention, and outcome was applied:

1. Context: Any setting or space contaminated by one or more individuals with laboratory confirmed infection with a clinical history of recurrent SSTI.
2. Intervention: Decontamination with products that are available to households (steam cleaners, bleach, household detergents or other cleaning products, hard surface detergent wipes, machine washing, vacuuming, cleaning surfaces with a damp cloth or hypochlorous acid).

3. Outcome: Incidence of staphylococcal infection in samples from the environment, personal items, or from pets or other animals.

Full details of the methodology are provided in the protocol in Annexe A.

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. Data extraction was performed by one reviewer and checked by a second.

Risk of bias assessment was conducted in duplicate by 2 reviewers using the appropriate JBI checklist for the study design (3). Certainty of evidence at the outcome level was assessed using a modified version of the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) framework (2), described in Annexe A.

There was one clarification to the review protocol:

- in the protocol it is stated that GRADE will be used to assess quality of evidence, however, in the report this is referred to as certainty of evidence

There was one deviation from the review protocol:

- a study was included that reported that the majority (more than 90%) rather than all of included participants had a clinical history of previous SSTI

Evidence

In total, 6,416 primary studies were screened at title and abstract and 77 studies were screened at full text. Eighteen further studies were identified from citation searching and relevant reviews. In total, 85 studies were screened at full text. Of these, one study was identified for inclusion in this review (1).

The full texts for all studies were retrieved. Studies excluded on full text screening are available with the reasons why in Annexe B.

One randomised controlled trial (1) examined the effectiveness of environmental decontamination (instruction on washing bed linens and pillows in warm water every other day and disinfection of high-touch areas with disposable disinfecting wipes) and household decolonisation (a 5-day protocol of twice-daily application of mupirocin antibacterial ointment and a daily whole body wash with an antiseptic chlorohexidine gluconate solution) in combination with usual care (incision and drainage plus oral antibiotics). Usual care protocols were as per the US Centre for Disease Control and Infectious Disease Society of America

guidelines (4, 5), compared to usual care without additional intervention. Participants were recruited from health centres or emergency departments, after presenting with symptoms of an SSTI infection and having a laboratory-confirmed baseline wound positive for either Methicillin-Resistant *Staphylococcus aureus* (MRSA) or Methicillin-Sensitive *Staphylococcus aureus* (MSSA). Although it was not a requirement for study participants to have a clinical history of recurrent SSTIs at baseline, a review of electronic health records identified that 90.7% of participants had a history of SSTI infection.

Sixty-three participants (65.1% male, 62.7% Hispanic or Latino, 90.5% presenting with a boil or abscess at baseline, mean age 39.5 years), and their households were randomised to receive the intervention, and 56 participants (55.4% male, 67.3% Hispanic or Latino, 91.1% presenting with a boil or abscess at baseline, mean age 36.5 years) were randomised to receive usual care without additional intervention. Environmental swabs were taken from 13 'high touch' areas (including from bathroom and kitchen floors, sink handles and other areas, household items such as the television remote control, and from personal effects such as a bathroom hairbrush or child's toy) at baseline and 3 months after intervention.

At baseline, almost all households had one or more contaminated surface in the home (96.8% in the intervention group and 96.4% in the usual care without additional intervention group). At 3-month follow-up, both groups had reductions in the proportion of households with one or more contaminated surface, but there was no difference between the groups (60.3% in the intervention group and 66.1% in the usual care without additional intervention group). The intervention group had less than one fewer (on average 0.31) contaminated surface than the usual care without intervention group, however this difference was not statistically significant (p=0.08).

Additional data from this study, including the proportion of each of the 13 'high touch' area contaminated at baseline and follow-up for both groups, are presented in Table D.1.

Certainty of evidence

The certainty of evidence within this review was assessed using a modified version of the Grading of Recommendations, Assessment, Development and Evaluations (GRADE) framework (2). This process is described in detail in Annexe A. In brief, the certainty of evidence at the outcome level was assessed across 4 domains (inconsistency, imprecision, risk of bias, indirectness) and given one of 4 ratings:

- 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)

In this review, inconsistency could not be assessed as only one study was identified for inclusion. Imprecision was not assessed as the outcomes of interest were presented as a percentage, without confidence intervals (and these could not be calculated using the available data).

Risk of bias was assessed using the JBI checklist for randomised controlled trials. Neither the participants or those delivering the treatment were blinded to the treatment assignment and, for the outcome of proportion of households with one or more contaminated surface, it was unclear whether the outcome assessor was blinded to treatment assignment. This lack of blinding may introduce bias into the results of this study. A summary of this risk of bias assessment is presented in Table E.1.

Indirectness, where elements of the study differ from the intended elements in the review question, was assessed at the outcome level for population/context, intervention, comparator, and outcome. For the outcome of proportion of households with one or more contaminated surface, all but one of the domains were rated as being measured sufficiently or probably sufficiently directly. The intervention was rated as probably not being sufficiently direct, as environmental decontamination was administered in conjunction with household decolonisation, and adherence to the intervention was not measured. A summary of this assessment is presented in Table F.1.

In this review, as per standard GRADE processes, randomised controlled trial evidence started at high certainty of evidence. After assessment of risk of bias and indirectness, the certainty of evidence was downgraded to low. This is because of the lack of blinding of those delivering the intervention and the participants included in the trial, and the indirectness of the intervention. A GRADE summary of findings table is presented in Annexe G.

Health inequalities

Community settings more likely to experience health inequalities, including closed accommodation settings such as prisons and group accommodation settings, were explicitly defined within the inclusion criteria in the review protocol.

Only one study (1) was identified for inclusion in this review, and so data on which to assess health inequalities were limited. However, the included study represented a population in which health inequalities may be present. Study participants were recruited from community health centres in New York, USA. The population was predominantly Hispanic and Latino (64.9% of participants), with over half (56.9%) claiming Medicare or Medicaid (federal or state health insurance) and 22% with no health insurance.

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.

The available evidence is limited to a single study, which has some limitations. The included randomised controlled trial (1) administered an environmental decontamination protocol in combination with a five-day decolonisation intervention and usual care and compared to usual care only. The effectiveness of the decontamination protocol without decolonisation was not evaluated. In addition, adherence to the environmental decontamination protocol was not measured, and nor was the potential for participants in the intervention group to decontaminate surfaces with other cleaning methods, or the potential for participants in the control group to enhance their cleaning regimes in response to the infection.

Follow-up environmental samples were taken 3-months after the intervention was administered, rather than immediately following the initial decontamination and decolonisation protocols. Therefore, immediate effectiveness of the intervention was not assessed, and it is possible that the home environment was decontaminated and subsequently reinfected.

The study included in this review (1) did not blind the treatment assignment for the participants or those delivering the intervention and was unclear as to whether those who assessed the outcome of interest were blinded to the treatment assignment. This may introduce bias into the results of this study. The limitations of this study should be considered as part of the interpretation, as they may affect the findings of the study and so make it difficult to determine the true impact of the intervention on environmental decontamination.

This review used a modified version of GRADE (2) to assess the certainty of the evidence. When using GRADE to assess the certainty of evidence, the expectation is that the evidence will be assessed at the outcome level across all domains. Publication bias (selective publishing, or the failure to publish study findings based on the strength or direction of results) and inconsistency were not assessed as only one study was identified for inclusion and therefore there was no pooled data. Imprecision was not assessed as the available outcome data of interest were presented without confidence intervals. This means that the assessment of certainty was incomplete and not comprehensive. The limitations of this approach, and the limited data available to assess certainty, should be considered when interpreting the rating of the certainty of evidence in this review.

Evidence gaps

Only one study, reporting a single outcome relevant to the review, was identified on the effectiveness of decontamination strategies in household, shared accommodation or shared spaces in community settings that has been occupied by an individual with recurrent SSTIs in order to prevent recurrent infections.

No evidence was identified on the use of steam cleaners, bleach, vacuuming, hypochlorous acid, or cleaning with a damp cloth. No evidence was identified that compared decontamination interventions to each other, only to usual care without a decontamination intervention. Additionally, no evidence was identified that evaluated the effectiveness of decontamination strategies without a decolonisation regime.

Conclusion

The aim of this review was to identify and assess available evidence from studies that evaluated the effectiveness of decontamination strategies in household, shared accommodation or shared spaces in community settings that has been occupied by an individual with by an individual affected by recurrent SSTI to prevent recurrent infections. Decontamination methods included in this review were limited to those that can be available to household and other community settings.

In summary, one randomised controlled trial (1) was identified for inclusion that compared the effectiveness of environmental decontamination and household decolonisation in combination with usual care, compared to usual care without additional intervention. There were no differences between the groups in the reduction of contaminated surfaces. However, the evidence is limited to one study, and the certainty of evidence was assessed as low. The potential risks of bias and limitations of this study should be considered when interpreting the results from this review.

Acknowledgment

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

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- 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

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References

1. Tobin JN and others. 'Comparative effectiveness study of home-based interventions to prevent CA-MRSA infection recurrence' Antibiotics 2021: volume 10, issue 9, page 13
2. Schünemann H, and others. GRADE handbook for grading quality of evidence and strength of recommendations. Updated October 2013. The GRADE Working Group, 2013.
3. Aromataris E and others. 'JBI Manual for Evidence Synthesis. JBI' 2024
4. Centres for Disease Control and Prevention. 'Guidelines for environmental infection control in health-care facilities; recommendations of CDC and the Healthcare Infection Control Practices Advisory Committee (HICPAC)' 2003
5. Liu C and others. 'Clinical practice guidelines by the Infectious Diseases Society of America for the treatment of methicillin-resistant *Staphylococcus aureus* infections in adults and children' Clinical Infectious Diseases 2011: volume 52, issue 3, pages e18 to e55

Annexe A. Protocol

Review question

There is one review question:

1. What is the most effective household or shared space decontamination method for an individual affected by recurrent Staphylococcal skin and soft tissue infection to prevent recurrence?

A search for primary evidence to answer these questions will be conducted up to 26 June 2024.

Eligibility criteria

Table A.1 Inclusion and exclusion criteria

	Included	Excluded
Settings	Household and shared spaces (for example, university accommodation) Community settings (for example, sports clubs) Educational settings (for example, schools or nurseries) Group accommodation settings (for example, homeless accommodations, adult social care settings) Other closed accommodation settings (for example, prisons, military bases) Care homes (both with and without nursing)	Hospitals Laboratory settings
Context	Setting or space contaminated by an individual with laboratory confirmed infection with clinical history of recurrent Staphylococcal skin and soft tissue infections (cutaneous abscesses, boils, furuncles or carbuncles).	Setting or space contaminated by an individual with any other skin or soft tissue infection

	Included	Excluded
Intervention or exposure	Decontamination products that are available to households: • steam cleaners • bleach • household detergents or other household cleaning products • hard surface detergent wipes • machine washing of fabrics • vacuuming • cleaning surfaces with a damp cloth • hypochlorous acid	Any decontamination product that is used in a healthcare or laboratory setting (for example, hypochlorite 1,000 ppmlQuaternary Ammonium Compounds (Quats), UV light or hydrogen peroxide).
Outcomes	Incidence of staphylococcal infection in the following: • samples from the environment (for example, changing room surfaces) • samples from personal items (for example, toothbrushes) • samples from pets or other animals	
Language	English	Non-English language studies
Date of publication	Up to 26 June 2024	
Study design	Interventional studies (Randomised Controlled Trials, Non-randomised controlled trials) Cohort studies Case-control studies Cross-sectional studies	• systematic or narrative reviews • modelling studies • laboratory studies • case reports • case series • single-arm trials
Publication type	Published (peer-reviewed) Pre-prints	• guidelines • opinion pieces • letters • conference abstracts • editorials • news articles

Identification of studies

We will search OVID Medline, OVID Embase, Cochrane Central, Web of Science Core Collection and Web of Science Preprint Citation Index for studies published before 26 June 2024. The search strategy will be checked by another information specialist.

Additional studies may be identified through other methods such as grey literature searching or through consultation with topic experts within UKHSA.

Screening

Screening on title and abstract 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.

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 will include study date, decontamination method used, 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 (3). Risk of bias will be assessed by 2 reviewers independently with disagreements resolved through discussion or with a third reviewer.

Quality of evidence

The quality 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). Quality 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 quality of evidence will be assessed 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. This will be measures as described under Risk of bias assessment.
2. Inconsistency: where studies show different effects for the same outcome of interest. This will be assessed where there are 2 or more studies measuring the same outcome. Inconsistency will be rated down if the point estimates are not similar, or the confidence intervals do not overlap. If there is only one study for the outcome of interest, then inconsistency will not be assessed. Inconsistency will be assessed by one reviewer and checked by a second.
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. Indirectness will be assessed by one reviewer and checked by a second.
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. Imprecision will be assessed by one reviewer and checked by a second.

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

Because the JBI checklist will be used to assess risk of bias, evidence from randomised controlled trials will start at high quality, and evidence from observational studies will start at low quality. Evidence may be downgraded one or two levels following the assessment of quality or upgraded if there is a large magnitude of effect or clear dose-response gradient.

Synthesis

If data is presented in a consistent format between studies, a narrative synthesis will be produced to describe the results from this review. The number of studies, the number of participants in each study, effect size and variance and a summary of the quality assessment across the outcomes will be presented. Alternatively, if studies present methodological differences that would make synthesis inappropriate, a narrative summary of each study will be provided.

Search strategy

Ovid MEDLINE(R) ALL (1946 to 3 July 2024)

1. exp Staphylococcus aureus/ (93005)

2. exp Staphylococcal Infections/ (73328)
3. S* aureus.tw,kf. (144294)
4. MRSA.tw,kf. (30805)
5. MSSA.tw,kf. (4494)
6. staphylococc*.tw,kf. (186802)
7. or/1-6 (228085)
8. exp *Infection Control/ (41801)
9. exp Communicable Diseases/pc (93794)
10. (infect* adj3 (prevent* or control*)).tw,kf. (126688)
11. (disease* adj3 (prevent* or control*)).tw,kf. (210807)
12. (bacteri* adj3 (prevent* or control*)).tw,kf. (18417)
13. (spread* adj3 (prevent* or control*)).tw,kf. (19143)
14. (prevent* adj3 transmi*).tw,kf. (17998)
15. Environmental Microbiology/ (8122)
16. clean*.tw,kf. (121366)
17. cleans*.tw,kf. (9033)
18. soap*.tw,kf. (8298)
19. detergent*.tw,kf. (46126)
20. Decontamination/ (5879)
21. exp Equipment Contamination/ (14866)
22. decontamina*.tw,kf. (17139)
23. disinfect*.tw,kf. (40641)
24. contamina*.tw,kf. (310903)
25. (sterili#ation or sterili#e* or sterili#ing).tw,kf. (42918)
26. (saniti#* or sanitary or sanitation).tw,kf. (36555)
27. (environment* adj5 (hygien* or reservoir*)).tw,kf. (5380)
28. (chlorclean or chloroclean).tw,kf. (1)
29. exp Detergents/ (35903)
30. exp Disinfectants/ (77682)
31. exp Sterilization/ (34900)
32. bleach*.tw,kf. (17506)
33. steam*.tw,kf. (13963)
34. Steam/ (4275)
35. ((high or hot) adj3 (water or temperature*)).tw,kf. (113558)
36. Hot Temperature/ (127134)
37. wash*.tw,kf. (145993)
38. vacuum*.tw,kf. (48740)
39. Hypochlorous Acid/ (3099)
40. (hypochlorite or hypochlorous acid*).tw,kf. (12752)
41. (chloric* acid or chloranol or hydroxidochlorine).tw,kf. (53)
42. (hypochlorite or Chlorine hydroxide or Hypochloric acid or Chlorooxidane).tw,kf. (10140)
43. or/8-42 (1515096)
44. exp Recurrence/ (204650)

45. Chronic Disease/ (286148)
46. recurr*.tw,kf. (738565)
47. (boil or boils).tw,kf. (1275)
48. Furunculosis/ or Carbuncle/ (1588)
49. (furuncle* or furunculo*).tw,kf. (1508)
50. carbuncle*.tw,kf. (651)
51. abscess*.tw,kf. (91889)
52. exp Abscess/ (60525)
53. persist*.tw,kf. (606403)
54. (reinfect* or re-infect*).tw,kf. (15830)
55. (repeat* adj3 (infect* or disease*)).tw,kf. (7502)
56. or/44-55 (1774023)
57. 7 and 43 and 56 (2517)

Embase (1974 to 3 July 2024)

1. exp Staphylococcus aureus/ (227216)
2. exp Staphylococcus aureus infection/ (19112)
3. S* aureus.tw,kf. (182199)
4. MRSA.tw,kf. (44500)
5. MSSA.tw,kf. (7473)
6. staphylococc*.tw,kf. (217861)
7. or/1-6 (316166)
8. *infection control/ (30490)
9. *communicable disease control/ (561)
10. (infect* adj3 (prevent* or control*)).tw,kf. (159155)
11. (disease* adj3 (prevent* or control*)).tw,kf. (282825)
12. (bacteri* adj3 (prevent* or control*)).tw,kf. (21225)
13. (spread* adj3 (prevent* or control*)).tw,kf. (21429)
14. (prevent* adj3 transmi*).tw,kf. (21489)
15. clean*.tw,kf. (154680)
16. cleans*.tw,kf. (13161)
17. detergent*.tw,kf. (50148)
18. decontamination/ (6043)
19. decontamina*.tw,kf. (20814)
20. disinfect*.tw,kf. (47103)
21. environmental microbiology/ (966)
22. contamina*.tw,kf. (363311)
23. (sterili#ation or sterili#e* or sterili#ing).tw,kf. (45099)
24. (saniti#* or sanitary or sanitation).tw,kf. (37878)
25. (environment* adj5 (hygien* or reservoir*)).tw,kf. (6644)
26. (chlorclean or chloroclean).tw,kf. (4)
27. detergent/ (19559)
28. soap/ (5540)

29. exp disinfectant agent/ (590145)
30. bleach*.tw,kf. (19641)
31. soap*.tw,kf. (10244)
32. steam*.tw,kf. (16692)
33. ((high or hot) adj3 (water or temperature*)).tw,kf. (107272)
34. high temperature/ (43155)
35. wash*.tw,kf. (196401)
36. vacuum*.tw,kf. (48034)
37. or/8-36 (2016769)
38. recurrent disease/ (227311)
39. chronic disease/ (210476)
40. recurr*.tw,kf. (1105245)
41. (boil or boils).tw,kf. (1668)
42. exp furunculosis/ (2457)
43. carbuncle/ (650)
44. (furuncle* or furunculo*).tw,kf. (1472)
45. carbuncle*.tw,kf. (536)
46. abscess*.tw,kf. (117202)
47. exp abscess/ (129870)
48. persist*.tw,kf. (832666)
49. (reinfect* or re-infect*).tw,kf. (19723)
50. (repeat* adj3 (infect* or disease*)).tw,kf. (10811)
51. or/38-50 (2303518)
52. 7 and 37 and 51 (4459)

Cochrane Central Register of Controlled Trials

Date of search: 4 July 2024

ID	Search	Hits
#1	MeSH descriptor: [Staphylococcus aureus] explode all trees	1,182
#2	MeSH descriptor: [Staphylococcal Infections] explode all trees	1,550
#3	(S* aureus):ti,ab,kw (Word variations have been searched)	4,457
#4	(MRSA):ti,ab,kw (Word variations have been searched)	1,135
#5	(MSSA):ti,ab,kw (Word variations have been searched)	151
#6	(staphylococc*):ti,ab,kw (Word variations have been searched)	6,203
#7	#1 OR #2 OR #3 OR #4 OR #5 OR #6	6,745
#8	MeSH descriptor: [Infection Control] explode all trees	1,669
#9	MeSH descriptor: [Communicable Diseases] explode all trees	30,757
#10	(infect* NEAR/3 (prevent* or control*)):ti,ab,kw	25,626

ID	Search	Hits
#11	(disease* NEAR/3 (prevent* or control*)):ti,ab,kw	95,457
#12	(bacteri* NEAR/3 (prevent* or control*)):ti,ab,kw	3,541
#13	(spread* NEAR/3 (prevent* or control*)):ti,ab,kw	450
#14	(prevent* NEAR/3 transmi*):ti,ab,kw	3,335
#15	MeSH descriptor: [Environmental Microbiology] explode all trees	330
#16	(clean* OR cleans*):ti,ab,kw	12,645
#17	(detergent* OR soap*):ti,ab,kw	1,962
#18	MeSH descriptor: [Decontamination] explode all trees	154
#19	MeSH descriptor: [Equipment Contamination] explode all trees	467
#20	(decontamina*):ti,ab,kw	1,080
#21	(disinfect*):ti,ab,kw	3,575
#22	(contamina*):ti,ab,kw	6,571
#23	((sterili?ation or sterili?e* or sterili?ing)):ti,ab,kw	3,428
#24	(saniti* OR sanitary OR sanitation):ti,ab,kw	1,455
#25	(environment* NEAR/5 (hygien* or reservoir*)):ti,ab,kw	159
#26	(chlorclean OR chloroclean):ti,ab,kw	0
#27	MeSH descriptor: [Detergents] explode all trees	470
#28	MeSH descriptor: [Disinfectants] explode all trees	1,132
#29	MeSH descriptor: [Sterilization] explode all trees	699
#30	(bleach*):ti,ab,kw	1,538
#31	(steam*):ti,ab,kw	652
#32	MeSH descriptor: [Steam] explode all trees	56
#33	((high or hot) NEAR/3 (water OR temperature*)):ti,ab,kw	4,100
#34	MeSH descriptor: [Hot Temperature] explode all trees	2,587
#35	(wash*):ti,ab,kw	39,211
#36	(vacuum*):ti,ab,kw	2985
#37	{or #8-#36}	209,094
#38	MeSH descriptor: [Recurrence] explode all trees	16,596
#39	MeSH descriptor: [Chronic Disease] explode all trees	43,508
#40	recurr*:ti,ab,kw	94,942
#41	(boil OR boils):ti,ab,kw	83
#42	MeSH descriptor: [Furunculosis] explode all trees	17
#43	MeSH descriptor: [Carbuncle] explode all trees	4

ID	Search	Hits
#44	(furuncle* OR furunculo*):ti,ab,kw	109
#45	carbuncle*:ti,ab,kw	50
#46	abscess*:ti,ab,kw	4,636
#47	MeSH descriptor: [Abscess] explode all trees	836
#48	persist*:ti,ab,kw	49,903
#49	(reinfect* OR re-infect*):ti,ab,kw	1,439
#50	(repeat* NEAR/3 (infect* OR disease*)):ti,ab,kw	505
#51	{OR #38-#50}	184,491
#52	#7 AND #37 AND #51	350

Filtered to Trials only, 347 downloaded.

Web of Science Core Collection

Date of search: 4 July 2024

TS=(“S* aureus” OR MRSA OR MSSA OR staphylococc*)

And:

TS=(infect* NEAR/3 (prevent* or control*)) OR TS=(disease* NEAR/3 (prevent* or control*)) OR TS=(bacteri* NEAR/3 (prevent* or control*)) OR TS=(spread* NEAR/3 (prevent* or control*)) OR TS=(prevent* NEAR/3 transmi*) OR TS=(clean* OR cleans*) OR TS=(detergent* OR soap*) OR TS=(decontamina* OR disinfect* OR contamina* OR sterili?ation or sterili?e* or sterili?ing OR saniti?* or sanitary or sanitation) OR TS=(environment* NEAR/5 (hygien* or reservoir*)) OR TS=(chlorclean or chloroclean) OR TS=(bleach* OR steam*) OR TS=((high or hot) NEAR/3 (water or temperature*)) OR TS=(wash* OR vacuum* OR hypochlorite or “hypochlorous acid*”) OR TS=(“chloric* acid” or chloranol or hydroxidochlorine) OR TS=(hypochlorite or “Chlorine hydroxide” or Hypochloric acid or Chlorooxidane)

And:

TS=(recurr* OR boil or boils OR furuncle* or furunculo* OR carbuncle* OR abscess* OR persist* OR reinfect* or “re-infect*”) OR TS=(repeat* NEAR/3 (infect* or disease*))

2,708 results

Web of Science Preprint Citation Index

Date of search: 4 July 2024

TS=(“S* aureus” OR MRSA OR MSSA OR staphylococc*)

And:

TS=(infect* NEAR/3 (prevent* or control*)) OR TS=(disease* NEAR/3 (prevent* or control*)) OR TS=(bacteri* NEAR/3 (prevent* or control*)) OR TS=(spread* NEAR/3 (prevent* or control*)) OR TS=(prevent* NEAR/3 transmi*) OR TS=(clean* OR cleans*) OR TS=(detergent* OR soap*) OR TS=(decontamina* OR disinfect* OR contamina* OR sterili?ation or sterili?e* or sterili?ing OR saniti?* or sanitary or sanitation) OR TS=(environment* NEAR/5 (hygien* or reservoir*)) OR TS=(chlorclean or chloroclean) OR TS=(bleach* OR steam*) OR TS=((high or hot) NEAR/3 (water or temperature*)) OR TS=(wash* OR vacuum* OR hypochlorite or “hypochlorous acid*”) OR TS=(“chloric* acid” or chloranol or hydroxidochlorine) OR TS=(hypochlorite or “Chlorine hydroxide” or Hypochloric acid or Chlorooxidane)

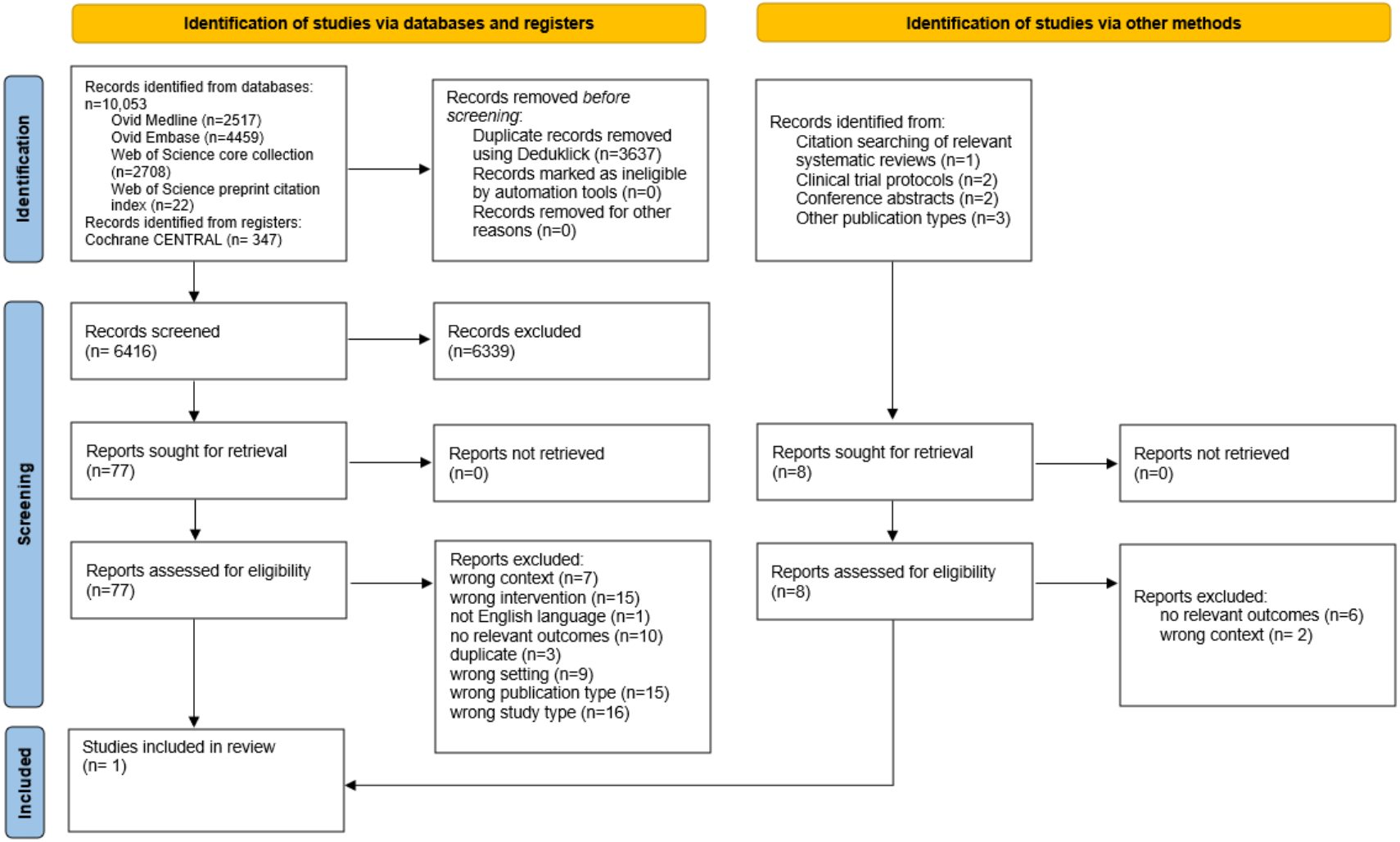
And:

TS=(recurr* OR boil or boils OR furuncle* or furunculo* OR carbuncle* OR abscess* OR persist* OR reinfect* or “re-infect*”) OR TS=(repeat* NEAR/3 (infect* or disease*))

22 results

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 one study.

From identification of studies via databases and registers, n=10,053 records identified from databases:

- Ovid Medline (n=2,517)
- Ovid Embase (n=4,459)
- Web of Science (n=2,730)
- Cochrane CENTRAL (n=347)

From these, records removed before screening:

- duplicate records removed using Deduklick (n=3,637)
- duplicate records removed manually (n=0)
- records marked as ineligible by automation tools (n=0)
- records removed for other reasons (n=0)

n=6,416 records screened, of which n=6,339 were excluded, leaving n=77 papers sought for retrieval, of which n=0 were not retrieved.

n=8 studies were identified from identification of studies via other methods: n=0 studies were identified from expert consultation.

Of the n=85 papers assessed for eligibility, n=84 reports were excluded:

- wrong context (n=9)
- wrong intervention (n=15)
- not English language (n=1)
- no relevant outcomes (n=16)
- duplicate (n=3)
- wrong setting (n=9)
- wrong publication type (n=15)
- wrong study type (n=16)

n=1 papers included in the review.

Annexe C. Excluded full texts

No relevant outcomes (16 studies)

Baldwin and others. 'Cluster randomised controlled trial of an infection control education and training intervention programme focusing on meticillin-resistant *Staphylococcus aureus* in nursing homes for older people' Journal of Hospital Infection 2010: volume 76, issue 1, pages 36 to 41

Cluzet and others. 'The effect of total household decolonization on clearance of colonization with methicillin-resistant *Staphylococcus aureus*' Infection Control and Hospital Epidemiology 2016: volume 37, issue 10, pages 1,226 to 1,233

D'Orazio and others. 'Stakeholder engagement in a comparative effectiveness/implementation study to prevent *Staphylococcus Aureus* infection recurrence: CA-MRSA Project (CAMP2)' Progress in Community Health Partnerships 2022: volume 16, issue 1, pages 45 to 60

Fritz and others. 'Household versus individual approaches to eradication of community-associated *Staphylococcus aureus* in children: a randomized trial' Clinical Infectious Diseases 2012: volume 54, issue 6, pages 743 to 751

Hall and others. 'Multiclonal outbreak of methicillin-resistant *Staphylococcus aureus* infections on a collegiate football team' Epidemiology and Infection 2009: volume 137, issue 1, pages 85 to 93

Hogan and others. 'Interplay of personal, pet, and environmental colonization in households affected by community-associated methicillin-resistant *Staphylococcus aureus*' Journal of Infection 2019: volume 78, issue 3, pages 200 to 207

Huang and others. 'Decolonization to reduce postdischarge infection risk among MRSA Carriers' New England Journal of Medicine 2019: volume 380, issue 7, pages 638 to 650

Kaplan and others. 'Randomized trial of “bleach baths” plus routine hygienic measures versus routine hygienic measures alone for prevention of recurrent infections' Clinical Infectious Diseases 2013: volume 58, issue 5, pages 679 to 682

Landen and others. 'Outbreak of boils in an Alaskan village' Western Journal of Medicine 2000: volume 172, issue 4, pages 235 to 239

National Clinical Trial (NCT). 'A randomized clinical trial to prevent recurrent CA-MRSA infection' Cochrane Central Register of Controlled Trials 2007

Leistner and others. 'Pyoderma outbreak among kindergarten families: association with a Panton-Valentine leukocidin (PVL)-producing *S. aureus* strain' PLoS ONE [Electronic Resource] 2017: volume 12, issue 12, article e0189961

Nguyen and others. 'Recurring methicillin-resistant *Staphylococcus aureus* infections in a football team' Emerging Infectious Diseases 2005: volume 11, issue 4, pages 526 to 532

Plumb and others. 'Acceptability of household practices to prevent boils in rural Alaska' Journal of Environmental Health 2021: volume 84, issue 1, pages 26 to 34

Reich-Schupke and others. 'Eradication of MRSA in chronic wounds of outpatients with leg ulcers is accelerated by antiseptic washes: results of a pilot study' International Journal of Hygiene and Environmental Health 2010: volume 213, issue 2, pages 88 to 92

Rihn and others. 'Community-acquired methicillin-resistant *Staphylococcus aureus* outbreak in a local high school football team unsuccessful interventions' Pediatric Infectious Disease Journal 2005: volume 24, issue 9, pages 841 to 843

Zimakoff and others. 'Recurrent staphylococcal furunculosis in families' Scandinavian Journal of Infectious Diseases 1988: volume 20, issue 4, pages 403 to 405

Not English language (one study)

Gebel and others. 'New insights and assessment of the properties of surface cleaning and disinfection procedures. [German]' Hygiene + Medizin 2004: volume 29, pages 327 to 333

Wrong context (9 studies)

Bocher and others. 'The search and destroy strategy prevents spread and long-term carriage of methicillin-resistant *Staphylococcus aureus*: results from the follow-up screening of a large ST22 (E-MRSA 15) outbreak in Denmark' Clinical Microbiology and Infection 2010: volume 16, issue 9, pages 1,427 to 1,434

Boyle and others. 'Clinical trial designs for methicillin-resistant *staph aureus* in CF' Pediatric Pulmonology 2011: volume 34, pages 141 to 143

Celepkolu and others. 'A microbiological assessment of the oral hygiene of 24 to 72 month old kindergarten children and disinfection of their toothbrushes' BMC Oral Health 2014: volume 14, article number 94

Dezube and others. 'Eradication of persistent methicillin-resistant *Staphylococcus aureus* infection in cystic fibrosis' Journal of Cystic Fibrosis 2019: volume 18, issue 3, pages 357 to 363

Matheson and others. 'Hiding in plain sight: benefit of abrasion and laceration swabs in identification of Panton-Valentine leucocidin (PVL) meticillin-resistant *Staphylococcus aureus* (MRSA) colonisation in military personnel' Cureus 2023: volume 15, issue 5, article e39487

Millar and others. 'Steam disinfection of toothbrushes from patients with cystic fibrosis: evidence-based recommendations' Pediatric Pulmonology 2020: volume 55, issue 11, pages 3,012 to 3,020

Muhlebach and others. 'Microbiological efficacy of early MRSA treatment in cystic fibrosis in a randomised controlled trial' Thorax 2017: volume 72, issue 4, pages 318 to 326

Oliver and others. 'Evaluation of chlorhexidine as a premilking teat disinfectant for the prevention of intramammary infections during lactation' Journal of Food Protection 1994: volume 57, issue 7, pages 614 to 618

Vargová and others. 'Biofilm-producing ability of *Staphylococcus aureus* obtained from surfaces and milk of mastitic cows' Veterinary Sciences 2023: volume 10, issue 6, page 15

Duplicate (3 studies)

D'Orazio and others. 'Implementing and evaluating an evidence-based intervention from the intensive care unit (ICU) setting into primary care using promotoras to reduce CA-MRSA recurrence and household transmission' Journal of Clinical and Translational Science 2018: volume 2, page 71

National Clinical Trial (NCT). '*Staphylococcus aureus* decolonization study'

National Clinical Trial (NCT). 'Patient-centered comparative effectiveness research (CER) study of home-based interventions to prevent CA-MRSA infection recurrence'

Wrong intervention (15 studies)

Archibald and others. 'Methicillin-resistant *Staphylococcus aureus* infection in a college football team: risk factors outside the locker room and playing field' Infection Control and Hospital Epidemiology 2008: volume 29, issue 5, pages 450 to 453

Bartlett and others. 'Furunculosis in a high school football team' American Journal of Sports Medicine 1982: volume 10, issue 6, pages 371 to 374

Baud and others. 'First outbreak of community-acquired MRSA USA300 in France: failure to suppress prolonged MRSA carriage despite decontamination procedures' European Journal of Clinical Microbiology and Infectious Diseases 2014: volume 33, pages 1,757 to 1,762

Borer and others. 'Community-acquired methicillin-resistant *Staphylococcus aureus* in institutionalized adults with developmental disabilities' Emerging Infectious Diseases 2002: volume 8, issue 9, pages 966 to 970

Bourigault and others. 'Outbreak of skin infections due to Panton-Valentine leukocidin-positive methicillin-susceptible *Staphylococcus aureus* in a French prison in 2010 to 2011' PLoS currents 2014: volume 6, page 7

Farley and others. 'Methodologic considerations of household-level methicillin-resistant *Staphylococcus aureus* decolonization among persons living with HIV' American Journal of Infection Control 2017: volume 45, issue 10, pages 1,074 to 1,080

Fritz and others. 'Contamination of environmental surfaces with *Staphylococcus aureus* in households with children infected with methicillin-resistant *S aureus*' JAMA Pediatrics 2014: volume 168, issue 11, pages 1,030 to 1,038

Hogan and others. 'Environmental methicillin-resistant *Staphylococcus aureus* contamination, persistent colonization, and subsequent skin and soft tissue infection' JAMA Pediatrics 2020: volume 174, issue 6, pages 552 to 562

Knox and others. 'Association of environmental contamination in the home with the risk for recurrent community-associated, methicillin-resistant *Staphylococcus aureus* infection' JAMA Internal Medicine 2016: volume 176, issue 6, pages 807 to 815

Miko and others. 'Is environmental contamination associated with *Staphylococcus aureus* clinical infection in maximum security prisons?' Infection Control and Hospital Epidemiology 2013: volume 34, pages 540 to 542

Shahbazian and others. 'Multidrug and mupirocin resistance in environmental methicillin-resistant *Staphylococcus aureus* (MRSA) isolates from homes of people diagnosed with community-onset mrsa infection' Applied and Environmental Microbiology 2017: volume 83, issue 22, page 15

Sosin and others. 'An outbreak of furunculosis among high school athletes' American Journal of Sports Medicine 1989: volume 17, issue 6, pages 828 to 832

Steele and others. 'Recurrent staphylococcal infection in families' Archives of Dermatology 1980: volume 116, issue 2, page 189 to 190

Strausbaugh and others. 'Antimicrobial therapy for methicillin-resistant *Staphylococcus aureus* colonization in residents and staff of a Veterans Affairs nursing home care unit' Infection Control and Hospital Epidemiology 1992: volume 13, issue 3, pages 151 to 159

Wiese-Posselt and others. 'Successful termination of a furunculosis outbreak due to lukS-lukF-positive, methicillin-susceptible *Staphylococcus aureus* in a German village by stringent decolonization, 2002 to 2005' Clinical Infectious Diseases 2007: volume 44, issue 11, e88 to e95

Wrong setting (9 studies)

Clarke and others. 'Persistence of vancomycin-resistant enterococci (VRE) and other bacteria in the environment' Irish Medical Journal 2001: volume 94, issue 9, pages 277 to 278

Gannon and others. 'Methicillin-resistant *Staphylococcus aureus*: persistent increase despite infection control measures' Critical Care Medicine 2000: volume 28, issue 12, pages A169 to A169

Gehlbach and others. 'Recurrence of skin disease in a nursery: ineffectuality of hexachlorophene bathing' Pediatrics 1975: volume 55, issue 3, pages 422 to 424

Graham and others. 'Hexachlorophene in skin infection control in susceptible infants' American Journal of Diseases of Children 1963: volume 105, pages 462 to 465

Hayden and others. 'Reduction in acquisition of vancomycin-resistant enterococcus after enforcement of routine environmental cleaning measures' Clinical Infectious Diseases 2006: volume 42, issue 11, pages 1,552 to 1,560

Koubali and others. 'Kinetics of adhesion *Staphylococcus aureus* on glass in the presence of sodium lauryl sulfate' Journal of Surfactants and Detergents 2021: volume 24, issue 3, pages 483 to 490

Luyckx and others. 'Comparison of competitive exclusion with classical cleaning and disinfection on bacterial load in pig nursery units' BMC Veterinary Research 2016: volume 12, page 10

Mork and others. 'Longitudinal, strain-specific *Staphylococcus aureus* introduction and transmission events in households of children with community-associated meticillin-resistant *S aureus* skin and soft tissue infection: a prospective cohort study' The Lancet Infectious Diseases 2020: volume 20, issue 2, pages 188 to 198

Salgado and others. 'Clear polyurethane coatings with excellent virucidal properties: Preparation, characterization and rapid inactivation of human coronaviruses 229E and SARS-CoV-2' Applied Materials Today 2023: volume 32, 101828

Wrong publication type (15 studies)

Bartley and others. 'Reservoirs of pathogens causing health care-associated infections in the 21st century: is renewed attention to inanimate surfaces warranted?' Clinical Microbiology Newsletter 2008: volume 30, pages 113 to 117

Cassone and others. 'Persistence of multidrug-resistant organisms during occupancy changes in the nursing home setting, and impact of patient hand hygiene assistance' Open Forum Infectious Diseases 2020: volume 7, page S493

Davis and others. 'Home environmental contamination is associated with community-associated methicillin-resistant Staphylococcus aureus re-colonization in treated patients' Open Forum Infectious Diseases 2017: volume 4, page S7

Dezube and others. 'Update on the persistent methicillin-resistant *Staphylococcus aureus* eradication protocol (PMEP) trial' Pediatric Pulmonology 2015: volume 41, page 314

D'Orazio and others. 'Implementing and evaluating an evidence-based intervention from the intensive care unit (ICU) setting into primary care using promotoras to reduce CA-MRSA recurrence and household transmission' Journal of Clinical and Translational Science 2018: page 71

Goss and others. 'Star-too clinical trial' Pediatric Pulmonology 2015: volume 41, pages 147 to 148

Heirali and others. 'The microbial constituents of the home environment in individuals with cystic fibrosis (CF): An association with the lower airways?' Pediatric Pulmonology 2014: volume 38, pages 347 to 348

Katz and others. 'Cleaning house-environmental contamination in the home' JAMA Internal Medicine 2016: volume 176, page 815

Maruskova and others. 'What's bugging you (1)?: Infections with Panton-Valentine leukocidin (PVL)-positive *Staphylococcus aureus* in children with atopic eczema' Clinical and Experimental Allergy 2011: volume 41, pages 1,863 to 1,864

Mohle-Boetani and others. 'Using towels and soap in steam baths could reduce infection' Western Journal of Medicine 2000: volume 172, page 239

National Clinical Trial (NCT). 'Prevention of recurrent infections caused by community-acquired staphylococcus in children 3 months to 18 years'

National Clinical Trial (NCT). 'Project CLEAR: Changing Lives by Eradicating Antibiotic Resistance'

National Clinical Trial (NCT). 'Staph Household Intervention for Eradication (SHINE)' Cochrane Central Register of Controlled Trials 2015

National Clinical Trial (NCT). 'Staph Intervention for Effective Local' Defense' Cochrane Central Register of Controlled Trials 2024

Snounou and others. 'PVL-SA: Management of a 2 household extended family outbreak' Irish Journal of Medical Science 2016: volume 185, pages S535 to S536

Wrong study type (16 studies)

Atanaskova and others. 'Innovative management of recurrent furunculosis' Dermatologic Clinics 2010: volume 28, issue 3, pages 479 to 487

Buckley and others. 'Methicillin-resistant *staphylococcus aureus* in athletic settings' Athletic Therapy Today 2007: volume 12, pages 20 to 23

Creech and others. 'Prevention of recurrent staphylococcal skin infections' Infectious Disease Clinics of North America 2015: volume 29, pages 429 to 464

Dancer and others. 'Controlling hospital-acquired infection: focus on the role of the environment and new technologies for decontamination' Clinical Microbiology Reviews 2014: volume 27, issue 4, pages 665 to 690

Davis and others. 'Household transmission of meticillin-resistant *Staphylococcus aureus* and other staphylococci' The Lancet Infectious Diseases 2012: volume 12, issue 9, pages 703 to 716

Hughes and others. 'Infection control strategies for preventing the transmission of meticillin-resistant *Staphylococcus aureus* (MRSA) in nursing homes for older people' Cochrane Database of Systematic Reviews 2008: issue 1, page 17

Jeanes and others. 'Eradication of persistent environmental MRSA' Journal of Hospital Infection 2005: volume 61, issue 1, pages 85 to 86

Kalka-Moll and others. 'Intrafamilial outbreak of subcutaneous abscesses caused by PVL-positive methicillin-sensitive *Staphylococcus aureus*' Journal of Infection 2008: volume 57, pages 278 to 280

Kalu and others. 'Management and prevention of *Staphylococcus aureus* infections in children' Infectious Disease Clinics of North America 2022: volume 36, issue 1, pages 73 to 100

Knox and others. '*Staphylococcus aureus* infections: transmission within households and the community' Trends in Microbiology 2015: volume 23, issue 7, pages 437 to 444

Knox and others. 'Stopping household methicillin-resistant *Staphylococcus aureus* transmission and recurrent infections: an unmet challenge' Clinical Infectious Diseases 2021: volume 73, pages E4578 to E4580

Koch and others. 'Boils and Carbuncles' Surgery, Gynecology and Obstetrics 1963: volume 117, pages 231 to 232

Pittet and others. 'Are decontamination measures effective in preventing recurrent staphylococcal skin infection in children?' Archives of Disease in Childhood 2020: volume 105, issue 6, pages 603 to 607

Rimoldi and others. 'Remitting infections due to community-acquired Panton-Valentine leukocidin-producing *Staphylococcus aureus* in the Milan area' Journal of Infection and Public Health 2018: volume 11, pages 255 to 259

Silva de Lima and others. 'Furuncular myiasis: dermoscopic features using a cross-polarized device without contact' Journal of the American Academy of Dermatology 2014: volume 72, issue 1, pages S6 to S7

Weinstein and others. 'Blood culture contamination: Persisting problems and partial progress' Journal of Clinical Microbiology 2003: volume 41, issue 6, pages 2,275 to 2,278

Annexe D. Data extraction tables

Table D.1. Summary of included studies

Abbreviations: MRSA = methicillin-sensitive *Staphylococcus aureus*. MSSA = methicillin-sensitive *Staphylococcus aureus*. SSTI = skin and soft tissue infection.

Study	Country, time period	Setting	Participants	Intervention	Sample type	Outcomes
Tobin and others, 2021 (1)	USA, November 2015 to November 2017	Households	n=119 (mean age 38.1 years [SD: 14.9 years], 60.5% male, 64.9% Hispanic or Latino, 90.8% with abscess or boil) • recruited from community health centres or hospitals • presented with symptoms of an SSTI infection • laboratory-confirmed baseline wound positive for either MRSA or MSSA • 90.7% had documented pre-study SSTIs in their electronic health records • type of insurance: 47.5% Medicaid, 22.0% No insurance, 12.8% other insurance, 9.4% Medicare, 8.5% private insurance	Randomised to one of 2 groups: 1. Five-day environmental decontamination (instruction on washing bed linens and pillows in warm water every other day and disinfection of high-touch areas with disposable disinfecting wipes) and household decontamination (a 5-day protocol of twice-daily application of mupirocin ointment and a daily whole body wash with a chlorohexidine gluconate solution) protocol alongside usual care (n=63, mean age 39.5 years [SD: 15.4 years], 65.1% male, 62.7% Hispanic or Latino, 90.5% presenting with a boil or abscess at baseline) 2. Usual care (incision and drainage plus oral antibiotics) without additional intervention (n=56, mean age 36.5 years [SD: 14.4 years], 55.4% male, 67.3% Hispanic or Latino, 91.1% presenting with a boil or abscess at baseline)	1. Samples from the environment. 2. Samples from personal items.	13 high-touch sites in the home were sampled at baseline and 3-months after intervention. Proportion of households with one or more surface in the home contaminated with *Staphylococcus aureus*: • intervention: 96.8% (baseline), 60.3% (3-month follow-up) • usual care: 96.4% (baseline), 66.1% (3-month follow-up) • at 3-month follow-up, 0.31 fewer contaminated surfaces in the experimental group compared to usual care (p=0.08) Number of total surfaces contaminated: 0: Experimental: 3.2% (baseline), 39.7% (3-month follow-up) Usual care: 3.6% (baseline), 33.9% (3-month follow-up) 1: Experimental, 6.4% (baseline), 3.2% (3-month follow-up). Usual care, 16.1% (baseline), 7.1% (3-month follow-up) 2: Experimental, 9.5% (baseline), 3.2% (3-month follow-up). Usual care, 10.7% (baseline), 5.4% (3-month follow-up) 3: Experimental, 11.1% (baseline), 11.1% (3-month follow-up). Usual care, 3.6% (baseline), 12.5% (3-month follow-up) 4: Experimental, 19.1% (baseline), 7.9% (3-month follow-up). Usual care, 17.9% (baseline), 5.4% (3-month follow-up) 5: Experimental, 7.9% (baseline), 11.1% (3-month follow-up). Usual care, 8.9% (baseline), 5.4% (3-month follow-up) 6: Experimental, 12.7% (baseline), 4.8% (3-month follow-up). Usual care, 12.5% (baseline), 1.8% (3-month follow-up)

Study	Country, time period	Setting	Participants	Intervention	Sample type	Outcomes
						7: Experimental, 9.5% (baseline), 7.9% (3-month follow-up). Usual care, 5.4% (baseline), 10.7% (3-month follow-up) 8: Experimental, 7.9% (baseline), 4.8% (3-month follow-up). Usual care, 7.1% (baseline), 7.1% (3-month follow-up) 9: Experimental, 9.5% (baseline), 4.8% (3-month follow-up). Usual care, 5.4% (baseline), 5.4% (3-month follow-up) 10: Experimental, 0.0% (baseline), 0.0% (3-month follow-up). Usual care, 5.4% (baseline), 1.8% (3-month follow-up) 11: Experimental, 1.6% (baseline), 1.6% (3-month follow-up). Usual care, 1.8% (baseline), 3.6% (3-month follow-up) 12: Experimental, 1.6% (baseline), 0.0% (3-month follow-up). Usual care, 1.8% (baseline), 0.0% (3-month follow-up) Proportion of households with site contaminated: Bedroom floor: Intervention: 49.2% (baseline), 36.5% (3-month follow-up) Usual care: 60.7% (baseline), 35.7% (3-month follow-up) Kitchen floor: Intervention: 60.3% (baseline), 39.7% (3-month follow-up). Usual care: 58.9% (baseline), 50.0% (3-month follow-up) Kitchen Countertop: Intervention: 41.3% (baseline), 28.6% (3-month follow-up) Usual care: 41.1% (baseline), 33.9% (3-month follow-up) Kitchen light switch: Experimental, 30.2% (baseline), 19.1% (3-month follow-up). Usual care, 16.1% (baseline), 12.5% (3-month follow-up) Refrigerator handle: Experimental, 38.1% (baseline), 34.9% (3-month follow-up). Usual care, 42.9% (baseline), 25% (3-month follow-up) Kitchen sink handle:

Study	Country, time period	Setting	Participants	Intervention	Sample type	Outcomes
						Experimental, 33.3% (baseline), 20.6% (3-month follow-up). Usual care, 35.7% (baseline), 26.8% (3-month follow-up) Front Doorknob: Experimental 27% (baseline), 7.9% (3-month follow-up). Usual care 30.4% (baseline), 10.7% (3-month follow-up) Bathroom toilet seat: Experimental, 52.4% (baseline), 34.9% (3-month follow-up). Usual care, 53.6% (baseline), 42.9% (3-month follow-up) Bathroom sink handle: Experimental, 50.8% (baseline), 28.6% (3-month follow-up). Usual care, 39.3% (baseline), 28.6% (3-month follow-up) Living room phone: Experimental, 33.3% (baseline), 14.3% (3-month follow-up). Usual care, 23.2% (baseline), 19.6% (3-month follow-up) Living room TV remote: Experimental, 41.3% (baseline), 23.8% (3-month follow-up). Usual care, 32.1% (baseline), 28.6% (3-month follow-up) Bathroom hairbrush: Experimental, 36.5% (baseline), 19.1% (3-month follow-up). Usual care, 21.4% (baseline), 19.6% (3-month follow-up) Bedroom child's toy: Experimental, 9.5% (baseline), 4.8% (3-month follow-up). Usual care, 21.4% (baseline), 17.9% (3-month follow-up)

Annexe E. Risk of bias assessment

Table E.1. Risk of bias assessment

Study	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Comments
Tobin and others, 2021 (1)	Yes	Yes	Yes	No	No	Yes	Can't tell	Yes	Yes	Yes	Yes	Yes	Yes	Q4: Participants not blinded to intervention assigned Q5: Those delivering treatment not blinded to intervention assigned Q7: Not clear if outcome assessor was blind to treatment assessment for environmental swabbing

Critical appraisal was done using the JBI checklist for randomised controlled trials (3).

List of questions:

Question 1: Was true randomization used for assignment of participants to treatment groups?
Question 2: Was allocation to treatment groups concealed?
Question 3: Were treatment groups similar at the baseline?
Question 4: Were participants blind to treatment assignment?
Question 5: Were those delivering the treatment blind to treatment assignment?
Question 6: Were treatment groups treated identically other than the intervention of interest?
Question 7: For each outcome, were outcome assessor blind to treatment assignment?
Question 8: For each outcome, were outcomes measured in the same way for treatment groups?
Question 9: For each outcome, were outcomes measured in a reliable way?
Question 10: For each outcome, was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analysed?
Question 11: For each outcome, were participants analysed in the groups to which they were randomised?
Question 12: For each outcome, was appropriate statistical analysis used?
Question 13: Was the trial design appropriate and any deviations from the standard RCT design (individual randomisation, parallel groups) accounted for in the conduct and analysis of the trial?

Annexe F. Assessment of indirectness

Table F.1. Summary of assessment of indirectness for each outcome

Outcome	Study	Q1	Q2	Q3	Q4	Q5	Comments
Proportion of environmental samples positive for *S. aureus*	Tobin and others, 2021 (1)	Probably yes	Probably no	Probably yes	Yes	Probably yes	Q1: Not all participants had a clinical history of recurrent infection. Q2: Environmental decontamination and household decontamination were administered together, not able to assess the effectiveness of household decontamination alone. Adherence to intervention not measured. Q3: Comparator in this study was usual care, potential changes in cleaning habits for both groups not measured. Q5: Measured 3 months after intervention administered.

Q1: Is the evidence for the context or population assessed sufficiently direct?
Q2: Is the evidence for the intervention assessed sufficiently direct?
Q3: Is the evidence for the comparator assessed sufficiently direct?
Q4: Is the evidence for the direct comparison assessed sufficiently direct?
Q5: Is the evidence for the outcome assessed sufficiently direct?

Annexe G. GRADE Summary of findings

Table G.1 GRADE summary of findings table

Quality assessment							Quality	Importance
Number of studies	**Study design**	**Risk of bias**	**Inconsistency**	**Indirectness**	**Imprecision**	**Other considerations**		
1	Randomised trials	Serious [note 1]	Not assessed	Serious [note 2]	Not assessed	None	⨁⨁◯◯ Low	Important

Abbreviations
CI = confidence interval. GRADE = Grading of Recommendations, Assessment, Development and Evaluations (GRADE) framework.

Explanations
Note 1: participants not blinded, those administering intervention not blinded, unclear if outcome assessors blinded.
Note 2: environmental decontamination and household decontamination were administered together, not able to assess the effectiveness of household decontamination alone. Adherence to intervention not measured.

About the UK Health Security Agency

UKHSA is responsible for protecting every member of every community from the impact of infectious diseases, chemical, biological, radiological and nuclear incidents and other health threats. We provide intellectual, scientific and operational leadership at national and local level, as well as on the global stage, to make the nation health secure.

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

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Published: May 2025
Publication reference: GOV-18434 (CPHR017c)

Suggested citation: Harris T, Bhatia A, Brini S, Hill J, Carville S. Decontamination of household and community settings to prevent recurrence of Staphylococcal infection: a rapid systematic review. UKHSA; 2025.