NHS National Services Scotland

Standard Infection Control Precautions: Respiratory and Cough Hygiene. Literature Review

Version 4.0

12 March 2026

Antimicrobial Resistance & Healthcare Associated Infection (ARHAI) Scotland
An NHS Scotland Assure Service

Version history

This literature review will be updated in real time if any significant changes are found in the professional literature or from national guidance/policy.

Version	Date	Summary of changes
1.0	January 2012	Defined as final.
2.0	August 2015	Updated after Review of current literature.
3.0	September 2021	**General:** Update of grades in line with grading standards outlined in appendix A. **What is the evidence to support covering as an aspect of cough etiquette?** Added recommendation: "In the absence of disposable tissues and hand hygiene facilities, individuals should cough or sneeze into their elbow/sleeve." **What is the evidence to support hand hygiene as an aspect of cough etiquette?** Recommendation to avoid touching face (nose, mouth and eyes) added. **What support is required for patients with restricted mobility or additional needs in understanding cough etiquette principles?** New question added based on review of literature.
4.0	March 2026	This literature review replaces the Standard Infection Control Precautions: Cough Etiquette literature review, Version 3.0. • Three-Year Update of the Literature Review • Title updated to align with content of the NIPCM. • Updated using a new methodology as outlined in the NIPCM development process.

Version	Date	Summary of changes
		• The Question set was reviewed and consolidated into five questions. • Databases were searched for evidence published between 2000 and October 2024. • Search strategies added as Appendix 1. • PRISMA diagram incorporated in Appendix 3.

Approvals

Version	Date Approved	Group/Individual
1.0	January 2012	Steering (Expert Advisory) Group for SICPs and TBPs
2.0	August 2015	Steering (Expert Advisory) Group for SICPs and TBPs
3.0	September 2021	National Policies and Outbreaks Steering Group
4.0	March 2026	National Policy, Guidance and Evidence (NPGE) Working Group
		Care Home Infection Prevention and Control (CHIPC) Oversight and Advisory Group

Key information

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Document information

Document information	Description
Description:	This literature review examines the available professional literature on respiratory and cough hygiene in health and care settings.
Purpose:	To inform the sections on respiratory and cough hygiene in the National Infection Prevention and Control Manual and the Care Home Infection Prevention and Control Manual, to facilitate the prevention and control of healthcare associated infections in NHS Scotland health and care settings.
Target Audience:	All NHS staff involved in the prevention and control of infection in NHS Scotland.
Update/review schedule:	Updated as new evidence emerges with changes made to recommendations as required. Review will be formally updated every 5 years with next review in (2031)
Cross reference:	National Infection Prevention and Control Manual Care Home Infection Prevention and Control Manual
Update level:	Practice – No significant changes to practice. Research – The implications for research are formulated based on a review of the available professional, scientific literature on the infection prevention and control (IPC) aspects or impacts respiratory and cough hygiene in health and care settings.

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Abbreviation list

Acronym	Definition
AGREE	Appraisal of Guidelines for Research and Evaluation
CDC	US Centers for Disease Control and Prevention
COVID-19	Coronavirus disease of 2019 or coronavirus 2 (SARS-CoV-2).
ECDC	European Centre for Disease Prevention and Control
EUNID	European Network for Infectious Diseases
HAI	Healthcare-associated infection
HCWs	Healthcare Workers
IPC	Infection Prevention and Control
MDRO	Multi-drug-resistant organism
NICE	National Institute for Health and Care Excellence
RSV	Respiratory Syncytial Virus
SARS	Severe acute respiratory syndrome
SIGN 50	Scottish Intercollegiate Guidelines Network (Publication No. 50)
TB	Tuberculosis
UKHSA	United Kingdom Health Security Agency
WHO	World Health Organization

Contents

1 Objective

The aim of this review is to examine the extant professional literature regarding the application of cough etiquette and respiratory hygiene for infection prevention and control purposes in health and care settings.

The specific research questions are provided below:

- What is meant by cough etiquette and respiratory hygiene?
- What are the effective components of cough etiquette and respiratory hygiene?
- When should the components of cough etiquette and respiratory hygiene be applied?
- What is the evidence to support hand hygiene as an aspect of cough etiquette and respiratory hygiene?
- What equipment should be available to support effective cough etiquette and respiratory hygiene?

2 Methodology

This targeted literature review was produced using a defined systematic methodology as described in the National Infection Prevention and Control Manual: Development Process. The complete search strategy is provided in Appendix 1.

The research questions have been revised to be more concise and a new research question, 'What equipment should be available to support effective cough etiquette and respiratory hygiene', was added to this review update. The previous research question, 'What is the evidence to support distancing/isolating people receiving healthcare as an element of cough etiquette?' was removed as this has been covered by the patient placement literature review. As the review is being updated using the new NIPCM methodology, a literature search dating back to 2000 was carried out to identify all relevant evidence.

Definitions for grades of evidence are provided in Appendix 2. A Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart, adapted from Moher et al.,[1] is presented in Appendix 3. A list of all studies excluded from the review after critical appraisal is provided in Appendix 4.

3 Discussion

3.1 Implications for practice

3.1.1 What is meant by cough etiquette and respiratory hygiene?

Twenty pieces of evidence were included for this research question.[2-21] Eighteen of these were SIGN 50 level 4 expert opinion guidance documents,[2-11, 13, 14, 16-21] and two guideline documents were graded as AGREE II 'recommend with modifications'.[12, 15] Seven of the included evidence pieces were from the United States of America (USA),[2, 5-7, 9-11] two from Canada,[18, 20] and one each from the United Kingdom (UK),[22] Australia,[3] and Republic of Ireland.[19] Six pieces of evidence were published by the World Health Organization (WHO),[4, 12, 14-16, 21] and two by the European Centre for Disease Prevention and Control (ECDC).[13, 17]

Two WHO guideline documents, graded AGREE II 'recommend with modifications', along with 11 expert opinion guidance documents from the UK, USA, Canada, Australia, ECDC, and WHO consistently define cough etiquette and respiratory hygiene as a set of measures or practices used to reduce the transmission of respiratory infectious agents that spread via the droplet or airborne routes. This includes covering the mouth and nose during breathing, coughing or sneezing by wearing a surgical or cloth mask or by covering the mouth with tissues, a sleeve, a flexed elbow or hand followed by hand hygiene.[3, 4, 6-8, 10-12, 15, 17-20] Two SIGN 50 level 4 expert opinion guidance further describe cough etiquette and respiratory hygiene as a source containment or control method.[6, 18]

Seven expert opinion guidance documents highlight that these measures are an integral component of standard infection control precautions,[2, 3, 5, 9, 13, 14, 21] which should be applied by everyone in healthcare settings, including patients, visitors and staff, regardless of infection or symptom status.[5, 10, 11, 14, 16] However, a CDC expert opinion guidance for outpatient oncology facilities proposes that cough etiquette and respiratory hygiene should only apply to all potentially infected persons with signs and symptoms of respiratory disease.[9]

In summary, the evidence base, which largely consists of extant expert opinion guidance, was generally consistent in defining cough etiquette and respiratory

hygiene as measures that are used to prevent or reduce the transmission of potentially infective respiratory secretions.

3.1.2 What are the effective components of cough etiquette and respiratory hygiene?

Twenty-nine pieces of evidence were included for this research question.[2-21, 23-31] Twenty-five of these were SIGN 50 level 4 expert opinion guidance documents,[2-11, 13, 14, 16-21, 23-28, 30] and two guideline documents were graded as AGREE II 'recommend with modifications'.[12, 15] Two observational studies were graded SIGN 50 level 3.[29, 31] Nine of the included piece of evidence are from the USA,[5-7, 9-11, 21, 25, 28] four from the UK,[8, 23, 26, 27] three each from Canada [18, 20, 29] and Australia,[3, 30, 31] and one from the Republic of Ireland.[19] Seven pieces of evidence were published by the WHO [4, 12, 14-16, 21, 24] and two by the ECDC.[13, 17]

Two WHO guidelines, graded AGREE II 'recommend with modifications', [12, 15] along with 24 SIGN 50 level 4 guidance documents [2-11, 13, 14, 16-21, 23-27, 30] propose that the components of cough etiquette and respiratory hygiene includes covering the mouth and nose with tissues, where tissues are not available then the use of an elbow is preferable to hands, followed by proper disposal of tissues into appropriate waste receptacle and hand hygiene. Five SIGN 50 level 4 guidance documents advise that hand hygiene should involve washing hands thoroughly with soap and water,[4, 17, 22, 23, 30] while two SIGN 50 level 4 guidance documents advise using alcohol-based hand rub.[4, 22] However, a PHS guidance document propose that hand sanitiser should only be used when soap and water are not available, as it is not effective against some viruses.[23] They further explained that washing hands with soap (preferably liquid soap) and warm water is the most effective way to clean hands, as it removes viruses and other micro-organisms.[23] Four SIGN 50 level 4 guidance documents further advise that contaminated hands should be kept away from the mucous membranes of the eyes, nose, and mouth.[3, 19, 27, 30]

Six SIGN 50 level 4 guidance documents from the USA, Canada and Australia were consistent in recommending that patients with symptoms of respiratory infections should turn their head away from others when coughing and sit as far away from others as possible or may be placed in a separate area while waiting for care in

healthcare facilities.[3, 6, 7, 14, 18, 20] Five SIGN 50 level 4 guidance documents further advise maintaining a separation of at least 1 metre (3 feet) when coughing or with respiratory infection symptoms.[2, 6, 14, 25, 30]

Two WHO guidelines on respiratory infection prevention and control, graded AGREE II 'recommend with modifications', propose that respiratory hygiene practices for people with acute respiratory infection (ARI) should involve wearing a surgical or cloth mask to cover mouth and nose while breathing, coughing, or sneezing.[12, 15] However, the WHO (2019) recommendation was based on limited and low quality primary studies, including four before and after studies that used surgical masks as part of bundled interventions and a prospective cohort animal model study. The recommendation from WHO (2014) is based on a systematic review (included animal model studies) and primary studies, including an animal model. Despite the low quality of evidence, both guidelines gave strong recommendations based on the development group expert opinion that wearing surgical mask and hand hygiene can help reduce the spread of infectious particles into the environment.

Sixteen SIGN 50 level 4 guidance documents further recommend that symptomatic patients and visitors should use a surgical mask as part of cough etiquette and respiratory hygiene.[5-8, 11, 13, 14, 16-21, 24, 25, 28] A CDC expert opinion guidance for outpatient oncology settings further advises that healthcare workers with respiratory infections, who cannot avoid direct patient contact, should wear a facemask while providing patient care.[9] However, as detailed in the NIPCM, symptomatic healthcare staff should not provide care while at risk of potentially transmitting infectious agents to others. Wood et al. in their observational study on cystic fibrosis (CF) patients with chronic *Pseudomonas aeruginosa* infection demonstrated that practicing cough etiquette (covering mouth with hand) and wearing a surgical mask or a N95 respirator significantly reduced viable *P. aeruginosa* aerosol dispersal [0.90 (0.50–1.30), 0.13 (0.00–0.30), and 0.11 (0.00–0.32) $\log_{10}$ CFU respectfully; all P=0.001] in comparison to uncovered coughing [1.66 (1.41–1.91) $\log_{10}$ CFU], measured using a closed wind tunnel system and six-stage Andersen Cascade Impactor at 2 metres.[31] The cough etiquette manoeuvre provided the least aerosol reduction (53%), compared to surgical mask and N95 respirators that provided 94% aerosol reduction. However, this study has multiple limitations including a small sample size

(n=25), participants were asked to use their usual mouth-covering technique for the cough etiquette manoeuvre, making comparisons difficult and prone to bias, and may have limited generalisability outside the patient group in which the study was conducted.

Another observational study by Zayas et al. assessed four different manoeuvres of cough etiquette and respiratory hygiene on healthy individuals; including use of tissue, hands, sleeve or arm, and surgical mask.[29] No manoeuvre was completely effective in blocking the dispersion of respiratory particles into the surrounding environment as measured by laser diffraction system. Only surgical mask and tissue manoeuvres provided reduction of respiratory particles in comparison to an unobstructed cough.[29] However, this study used a small sample size, unobstructed cough data from a prior study on different healthy participants was used as control value without statistical comparisons, and only measured droplet concentration and size (0.1 to 900 µm) from voluntary cough of healthy participants, hence, no conclusions can be drawn regarding effectiveness of manoeuvres against transmission of infectious particles.

In summary, there was consistency in extant guidance that the components of cough etiquette and respiratory hygiene include covering of the mouth and nose with tissues or masks, or elbow as opposed to hands, followed by proper disposal of used tissues into appropriate waste receptacle and hand hygiene. Other components identified in the literature includes turning head away from others when coughing and keeping a distance from others when symptomatic. There was limited primary evidence for this research question. The two studies included suggest that covering mouth with hand or tissues and wearing a surgical mask or N95 respirator may be effective for reducing respiratory particle dispersal. However, both studies have limitations which may limit their generalisability.

3.1.3 When should the components of cough etiquette and respiratory hygiene be applied?

Twenty-nine pieces of evidence were included for this research question.[2-13, 15-21, 24, 25, 28, 30-37] Twenty-seven of these were SIGN 50 level 4 expert opinion guidance documents,[2-11, 13, 16-21, 24, 25, 28, 30-37] and two guideline documents were graded

AGREE II 'recommend with modifications'.[12, 15] Thirteen of the included evidence documents are from the USA,[2, 5-7, 9-11, 25, 28, 33-35, 37] two each from Australia,[3, 30] the United Kingdom[8, 32] and Canada,[18, 20] and one from Republic of Ireland.[19] Six pieces of evidence were published by the WHO,[4, 12, 15, 16, 21, 24] two by the ECDC,[13, 17] and one by the European Network for Infectious Diseases (EUNID).[36]

Indications for cough etiquette and respiratory hygiene

Standard infection control precautions

Eight SIGN 50 level 4 guidance documents were consistent in recommending that cough etiquette and respiratory hygiene should be applied, as a standard infection control precaution, by all individuals (patients, residents, visitors, and staff) in health and care settings, from the first point of contact and maintained for the duration of stay, including while in reception areas, waiting rooms, communal and shared areas, outpatient clinics and triage areas.[2-4, 8, 11, 21, 25, 36]

Transmission based precautions

The Department of Health and Social Care Code of Practice advise that infection prevention and control measures should be applied at the point at which persons at-risk are identified.[32] A WHO guideline, graded AGREE II 'recommend with modifications', and 18 SIGN 50 level 4 guidance documents all recommend that cough etiquette and respiratory hygiene should be applied by all individuals (patients, residents, visitors, and staff) with symptoms of respiratory illness, and those suspected or confirmed to have acute respiratory infections upon entry into health and care facilities.[2, 3, 5, 6, 8, 10, 13, 15, 17-19, 24, 25, 28, 30, 33-35] A WHO guideline, graded AGREE II 'recommend with modifications', along with two CDC expert opinion guidance documents further advise that cough etiquette and respiratory hygiene should be applied by patients who may be at risk of transmitting airborne infectious diseases like tuberculosis (TB) and measles/rubeola.[6, 7, 12] However, a CDC expert opinion guidance document for outpatient oncology facilities proposes that respiratory hygiene and cough etiquette should be implemented at the point of entry of any "potentially infected persons" and can then be lifted "at the point it is determined that infected persons no longer require droplet or airborne precautions".[9]

During periods of high community transmission

Five SIGN 50 level 4 guidance documents further recommend that cough etiquette and respiratory hygiene should be applied by patients during periods of high community transmission of viral respiratory infections such as RSV, influenza, adenovirus, parainfluenza virus, COVID-19, and SARS.[6, 13, 25, 34, 37]

For vulnerable patients

Three SIGN 50 level 4 guidance documents advise that cough etiquette should be practiced by vulnerable individuals and those caring for them including healthcare workers, visitors and mothers of infants or children, on entry into health and care facilities.[4, 21, 25] Two SIGN 50 level 4 guidance documents further propose that patients with non-infectious respiratory conditions including asthma, allergic rhinitis or a chronic obstructive lung disease such as cystic fibrosis who are at greater risk from respiratory infections should also be encouraged to practice respiratory hygiene and cough etiquette when entering health care facilities.[6, 25]

Indication for the use of mask as component of cough etiquette

Two WHO guideline documents, graded AGREE II 'recommend with modifications', and 14 expert opinion guidance documents all recommended that symptomatic individuals and those who may be at risk of transmitting airborne infectious diseases, should supplement cough etiquette and respiratory hygiene with a surgical mask when in close proximity to others, when in communal spaces, when leaving isolation rooms, during transportation within or between healthcare settings[3, 5, 6, 8, 11-13, 15, 17-20, 25, 30, 34, 37] There is a scientific literature review that extensively covers the indications for using surgical face masks in the NIPCM.

In summary, there was consistency in the evidence base, which largely consists of extant expert opinion guidance, that cough etiquette and respiratory hygiene should be applied by all individuals (patients, residents, visitors, and staff) in health and care settings, especially if there is a risk of transmitting airborne infectious diseases to those deemed vulnerable to infection.

3.1.4 What is the evidence to support hand hygiene as an aspect of cough etiquette and respiratory hygiene?

Twenty pieces of evidence were included for this research question, all were SIGN 50 level 4 expert opinion guidance documents.[2-4, 6, 8-11, 13, 16-19, 23-28, 30] Seven of the included pieces of evidence are from the USA,[2, 6, 9-11, 25, 28] four from the UK,[8, 23, 26, 27] two from Australia,[3, 30] and one each from Canada,[18] and Republic of Ireland.[19] Three pieces of evidence were published by the WHO [4, 16, 24] and two by the ECDC.[13, 17] There were no primary research studies identified for this research question.

Twenty SIGN 50 level 4 guidance documents all recommend hand hygiene as a component of cough etiquette and respiratory hygiene, and advise it should be performed after coming into contact with respiratory tract secretions or any materials and objects that have become contaminated with respiratory secretions.[2-4, 6, 8-11, 13, 16-19, 23-28, 30]

A scientific literature review that extensively covers the indications and techniques for hand hygiene in health and care settings is available on the NIPCM. This review recommends hand hygiene after contact with body fluids (as per 'moment 3').

In summary, extant guidance is consistent in advising hand hygiene as a component of cough etiquette, which aligns with 'moment 3' of the hand hygiene indications as per the NIPCM Hand washing, hand rubbing and indications for hand hygiene literature review.

3.1.5 What equipment should be available to support effective cough etiquette and respiratory hygiene?

Thirty pieces of evidence were included for this research question.[2-13, 15-21, 24, 25, 28, 30-36, 38] Twenty-seven of these were SIGN 50 level 4 expert opinion guidance documents.[2-11, 13, 16-21, 24, 25, 28, 30-36] Two guideline documents were graded AGREE II 'recommend with modifications',[12, 15] and one mandatory document, a UK statutory instrument was also included.[38] Eleven of the included evidence are from the USA,[2, 5-7, 9-11, 25, 28, 33, 34] five from the UK,[8, 23, 26, 27, 38] two each from Australia [3, 30] and Canada,[18, 20] and one from the Republic of Ireland.[19] Seven pieces of evidence were published by the WHO, [4, 12, 14-16, 21, 24] and two by the ECDC.[13, 17]

According to the control of substances hazardous to health regulation 2002 (as amended), adequate materials, PPE, and washing facilities should be provided to prevent exposure to biological agents, which are considered substances hazardous to health.[38]

Two WHO guideline documents, graded AGREE II 'recommend with modifications',[12, 15] and 27 SIGN 50 level 4 expert opinion guidance documents [2-11, 13, 14, 16-21, 23-28, 30, 33, 34] were consistent in recommending that equipment that should be available to support effective cough etiquette and respiratory hygiene should include:

- Tissues to cough or sneeze into
- Hands-free waste receptacles for tissue disposal
- Face masks for symptomatic individuals
- Soap and water with handwashing sink and/or ABHR dispensers for hand hygiene purposes.

Four WHO evidence sources (a guideline and three expert opinion guidance documents) specify that a 'medical mask' should be provided,[4, 15, 16, 21] while six sources (a guideline and five expert opinion guidance documents) advise the use of a surgical mask.[3, 5-8, 12] A SIGN 50 level 4 expert opinion guidance document from the Optometrists Association Australia propose that FFP2 or N95 respirators should be provided for patients who presents with an influenza-like illness or have been in contact with a confirmed case of Influenza A (H1N1).[30]

Three SIGN 50 level 4 expert opinion guidance documents recommend that hand hygiene resources should be made available close to or within waiting areas, in common areas, entrances or triage areas.[11, 14, 34]

Four SIGN 50 level 4 expert opinion guidance documents advise that assistance and support should be provided to vulnerable and immobile patients, including children and the elderly, who are unable to contain secretions or wash hands independently and are unable to wear a mask. They further suggest that accessible plastic bags or containers for prompt disposal of waste along with arrangements for hand hygiene should be provided.[3, 22, 23, 25]

In summary, the evidence base, which largely consists of extant expert opinion guidance, was generally consistent in advising that tissues, hands-free waste receptacles, facemasks, and hand hygiene equipment should be available to support effective cough etiquette and respiratory hygiene. There is a lack of consistency in the type of mask that should be made available to support cough etiquette which might be due to country-specific mask requirements.

3.2 Implications for research

This literature review found very limited primary evidence on the application of cough etiquette and respiratory hygiene in health and care settings. This lack of evidence may be due to the subjective nature of the topic, and because the application and effectiveness of cough etiquette as a single entity can be difficult to measure quantitatively.

A small number of observational and experimental studies was identified, but most of these were excluded based on not meeting the inclusion criteria (that is, modelling studies and bundled approaches) and low-quality methodology. A list of all studies excluded from the review after critical appraisal is provided in Appendix 4.

This literature review did not identify rigorous evidence regarding the effectiveness of cough etiquette and respiratory hygiene in health and care settings. This evidence gap highlights the need for well-designed and appropriately controlled primary studies to assess the effectiveness of cough etiquette and respiratory hygiene for reducing the dispersion of respiratory particles and transmission of infection among individuals (patients, residents, visitors and healthcare workers) in health and care settings. This will provide rigorous evidence to strengthen the overall evidence base and support the expert opinion advice in extant guidance. However, it is acknowledged that ethical issues and other feasibility barriers may make this difficult to achieve.

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Appendix 1: Literature Review Search Strategy

Medline

Ovid MEDLINE(R) ALL <1946 to October 28, 2024>

1. exp cough/
2. (Cough* or sneez* or phlegm).ti,ab,kf.
3. exp sneezing/
4. (tissue* adj2 (dispos* or bin*)).ti,ab,kf.
5. Respiratory hygiene.ti,ab,kf.
6. 1 or 2 or 3 or 4 or 5 84246
7. Hand disinfection/ or Hand hygiene/
8. (hand* adj2 (wash* or hygiene or disinfect* or saniti*)).ti,ab,kf.
9. handwash*.ti,ab,kf.
10. exp infection control/
11. exp cross infection/
12. exp disease transmission, infectious/
13. Standard precautions.ti,ab,kf.
14. transmission based precaution*.ti,ab,kf.
15. 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14
16. 6 and 15
17. limit 16 to (english language and yr="2000 -Current")

Embase

Embase <1946 to October 28, 2024>

1. exp coughing/
2. exp sneezing/
3. (Cough* or sneez* or phlegm).ti,ab,kf.
4. Respiratory hygiene.ti,ab,kf.
5. (tissue* adj2 (dispos* or bin*)).ti,ab,kf.
6. 1 or 2 or 3 or 4 or 5
7. exp hand washing/
8. (hand* adj2 (wash* or hygiene or disinfect* or saniti*)).ti,ab,kf.
9. handwash*.ti,ab,kf.
10. *infection control/
11. exp cross infection/
12. standard precautions.ti,ab,kf.
13. transmission based precaution*.ti,ab,kf.
14. 7 or 8 or 9 or 10 or 11 or 12 or 13
15. 6 and 14
16. limit 15 to (english language and yr="2000 -Current")
17. 16 not conference*.so,pt.

CINAHL

S19. S6 AND S16, 2000-current, English Language

S18. S6 AND S16

S17. S6 AND S16

S16. S7 OR S8 OR S9 OR S10 OR S11 OR S12 OR S13 OR S14 OR S15

S15. TI transmission based precaution* OR AB transmission based precaution* OR SU transmission based precaution*

S14. TI Standard precautions OR AB Standard precautions OR SU Standard precautions

S13. (MH "Universal Precautions")

S12. (MH "Disease Transmission+")

S11. (MH "Cross Infection")

S10. (MH "Infection Control")

S9. TI handwash* OR AB handwash* OR SU handwash*

S8. TI ((wash* or hygiene or disinfect* or saniti*) N2 hand*) OR AB ((wash* or hygiene or disinfect* or saniti*) N2 hand*) OR SU ((wash* or hygiene or disinfect* or saniti*) N2 hand*)

S7. (MH "Handwashing"+)

S6. S1 OR S2 OR S3 OR S4 OR S5

S5. TI Respiratory hygiene OR AB Respiratory hygiene OR SU Respiratory hygiene

S4. TI ((dispos* or bin*) N2 tissue*) OR AB ((dispos* or bin*) N2 tissue*) OR SU ((dispos* or bin*) N2 tissue*)

S3. TI (Cough* or sneez* or phlegm) OR AB (Cough* or sneez* or phlegm) OR SU (Cough* or sneez* or phlegm)

S2. (MH "Sneezing")

S1. (MH "Cough+")

Appendix 2: Evidence levels

SIGN 50 Evidence levels

The SIGN 50 methodology was used to appraise and grade primary studies and expert opinion guidance documents.

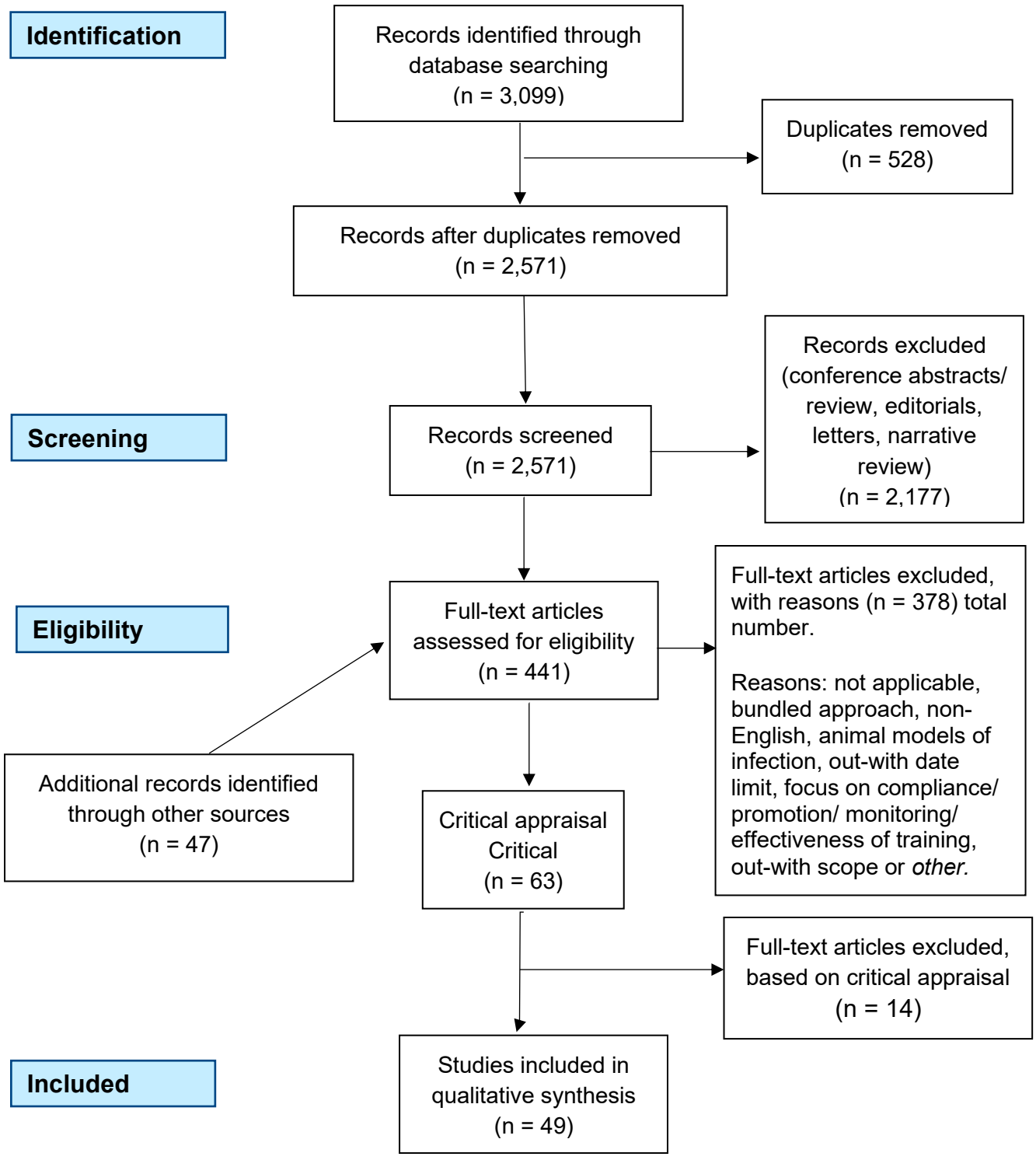
Grade	Description
1++	High-quality meta-analyses, systematic reviews of RCTs, or RCTs with a very low risk of bias
1+	Well-conducted meta-analyses, systematic reviews of RCTs, or RCTs with a low risk of bias.
1-	Meta-analyses, systematic reviews of RCTs, or RCTs with a high risk of bias
2++	High-quality systematic reviews of case-control or cohort studies. High-quality case-control or cohort studies with a very low risk of confounding, bias, or chance and a high probability that the relationship is causal
2+	Well-conducted case-control or cohort studies with a low risk of confounding, bias, or chance and a moderate probability that the relationship is causal
2-	Case-control or cohort studies with a high risk of confounding, bias, or chance and a significant risk that the relationship is not causal
3	Non-analytic studies, for example, case reports, case series
4	Expert opinion

AGREE II Evidence levels

The AGREE II tool was used to appraise guidelines which were based on a systematic review of evidence, and experts have formulated the recommendations/ statements.

Grade	Description
AGREE 'Recommend'	This indicates that the guideline has a high overall quality and that it can be considered for use in practice without modifications.
AGREE 'Recommend with modifications'	This indicates that the guideline has a moderate overall quality. This could be due to insufficient or lacking information in the guideline for some items. If modifications are made the guideline could still be considered for use in practice, when no other guidelines on the same topic are available.
AGREE 'Do not Recommend'	This indicates that the guideline has a low overall quality and serious shortcomings. Therefore, it should not be recommended for use in practice.

Appendix 3: PRISMA flow diagram



Appendix 4: Studies excluded following critical appraisal.

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